

# Hotline

The Princeton Plasma Physics Laboratory is a United States Department of Energy Facility

## Transforming CDX-U into New Experiment

In the reassembly activities going on this month, the Current Drive Experiment-Upgrade (CDX-U) is being transformed into a device in many ways prototypical of the National Spherical Tokamak Experiment (NSTX). NSTX is proposed as a national fusion project to be sited at PPPL.

"We are changing CDX-U into a high harmonic fast wave heating experiment," said Project Head Masayuki

Ono, who was also involved in the initial design of NSTX. "This is important for the NSTX project since it, too, will have a large amount of fast wave heating power." Fast wave heating appears to be one of the few viable ways to heat NSTX plasmas to a very high temperature, as well as to drive the plasma current — an essential element of a tokamak.

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## Frelinghuysen Vows Support

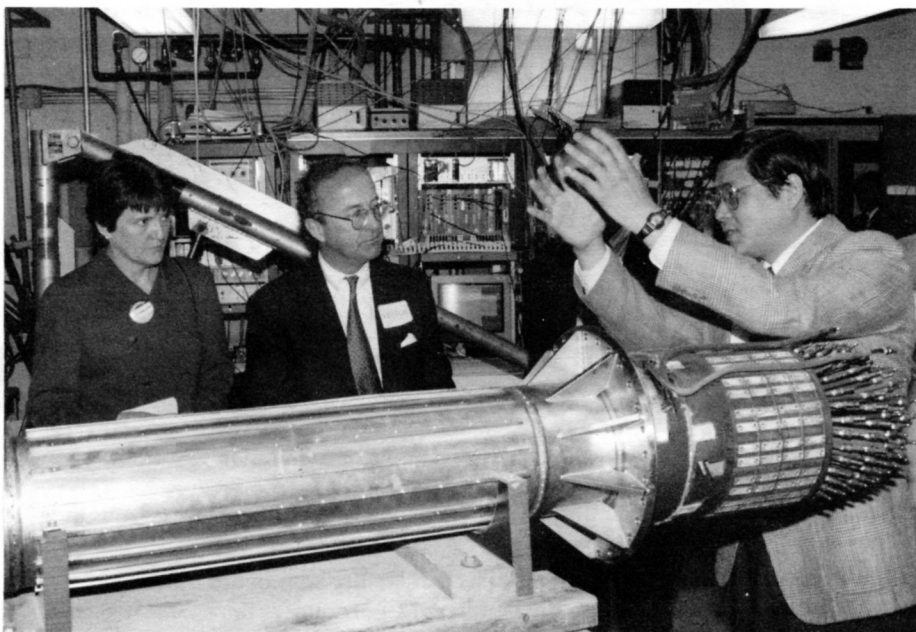
Calling PPPL a "truly remarkable place," Congressman Rodney Frelinghuysen vowed to continue his advocacy of the Laboratory and its fusion mission during a Wednesday, April 10, visit to the Lab.

"Let me salute each and every one of you for the work that you do," said Frelinghuysen, who addressed PPPL staff on the final leg of his visit.

Frelinghuysen, a Republican representing New Jersey's 11th Congressional District, has been one of the Laboratory's strongest supporters throughout the recent budget battle.

Said PPPL Director Ronald C. Davidson, "In October, 1995, through the persistent efforts of Representative Frelinghuysen, the House-Senate Conference Committee on Energy and Water added \$15 million above the House appropriations level

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Discussing the CDX-U project are, from left, Geraldine Shannon, of Princeton University's Office of Government Affairs in Washington, D.C., Congressman Rodney Frelinghuysen, and Masayuki Ono. (See related story about Frelinghuysen's visit to PPPL on this page).

## CDX-U

Continued from page 1

In 1994, CDX-U became the nation's first ohmically driven spherical tokamak. The plasma produced in the device more closely resembles a sphere with a hole through the center than a donut. Such plasmas are very compact and theories predict that these plasmas offer enhanced magnetic confinement and can produce substantial natural plasma current. Therefore, physicists believe that the spherical tokamak could lead to a more economical fusion reactor.

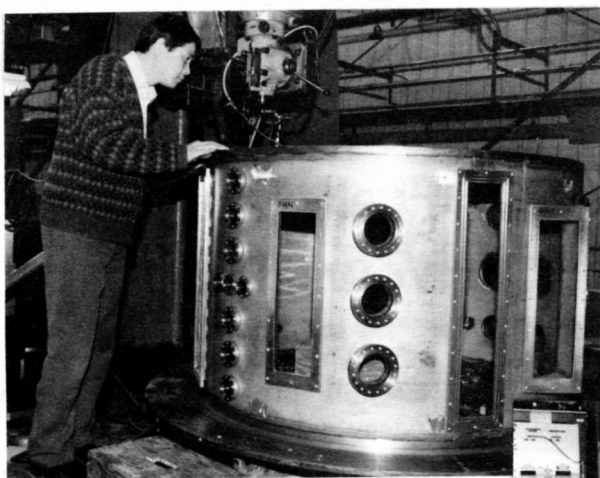
Ono said the conversion of CDX-U primarily entails replacing the outer vessel with a larger stainless steel chamber and making minor modifications to the top and bottom plates of the vessel. Because of the modularity of the device, a major change can be done quickly. CDX-U was taken apart in March and should be up and running again this month. "It's like a kit, composed of several different pieces that we can dismantle and put together again," said Ono.

The device is known for its versatility. Two years ago, it was taken apart and — with the addition of an ohmic heating coil in its center stack

— reassembled into a tokamak. But this is the first time a tokamak has been disassembled and reassembled in this manner. "As far as I know, no tokamak has done this kind of changeover in such a short time," said Ono, adding that he hopes NSTX will be similar in its adaptability to change.

"Innovative projects some times call for new hardware and new configuration," commented Ono.

The project team for dismantling and reassembling CDX-U includes Jon Menard, Jim Taylor, Wanho Choe, Dan Stutman, Ernest Lo, Josh Breslau, and Yong-Seok Hwang. ●



*Clockwise, from left, CDX-U Head Masayuki Ono inspects the new stainless steel vacuum vessel, a major part of the upgrade; Robert "Red" Delany welds parts on the top flange; Ono stands in the CDX-U room that is temporarily vacant while the device is being converted.*



## HOTLINE

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## Frelinghuysen

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for fusion. We are indebted to Representative Frelinghuysen for his extraordinary efforts on behalf of fusion and the Laboratory.”

Davidson, along with Milton Johnson, Manager of the Department of Energy's Princeton Group, and Daniel Weitz, Westinghouse Science Talent Search finalist, met with Frelinghuysen before the Congressman toured TFTR and several small innovative projects at the Lab, including NSTX, MRX, CDX-U, and Plasma Processing.

His visit culminated in delivering remarks to PPPL staff at the MBG Auditorium. “In the short time I've been here, I have been most impressed by the individuals I have met. (PPPL) is truly a remarkable place,” said Frelinghuysen.

He urged staff to “gear up” and educate this new Congress — and the general public — about fusion research. “You need to bring members of Congress here to see what's going on because while we talk about dollars, my view is that neither the administration nor the Congress is adequately providing for what you are focusing on.”

He noted that Weitz, a student at Morristown High School who came in sixth nationally in the

Westinghouse Science Talent Search, has spent several summers at PPPL. “A lot of what he learned and of what he represents in terms of the future ... revolves around what he picked up here,” said Frelinghuysen of Weitz's experience at the Lab.

The Representative urged PPPL to continue to reach

young people by providing them with similar opportunities and experience. “Physically being here and seeing the creativity will go a long way toward persuading Congress — and for that matter, the Administration — to take a closer look at what's going on,” said Frelinghuysen.

He said PPPL's scientists must also get the word on fusion out to the general public. “Our fellow Americans have no physical knowledge of what's here (at PPPL),” said Frelinghuysen. “... As individuals, we have some responsibility to translate to our peers — and I mean outside of this room — and to capture their imagination about what you are doing.”

He advised the research staff, as they write papers based on the re-

search data they collect, to communicate their work in “plain English” to the public at large. “As a layperson, I am coming away from here with a little bit of education and a lot of enthusiasm. There must be some way to translate that into the written word or, for that matter,



PPPL Director Ronald C. Davidson (right) pauses with Congressman Rodney Frelinghuysen in the Lobby.

through computer technology. ... We have to do it. It is absolutely imperative,” said the Congressman.

Frelinghuysen promised to continue his advocacy of fusion research and said he hopes to bring other members of Congress to PPPL. “A lot of the members of my committee just don't have the familiarity with fusion. So I will double my efforts to educate them and do my best to bring them here,” added Congressman Frelinghuysen, who is on the House Appropriations Subcommittee on Energy and Water Development.

**“Share the bounty of what you are doing with the general population. It's in your personal interest, but most importantly, it is in our national interest.”  
— Rep. Frelinghuysen**

He closed by reiterating the importance of reaching the public.

“Share the bounty of what you are doing with the general population. It's in your personal interest, but most importantly, it is in our national interest,” Frelinghuysen said. ●



Daniel Weitz (left) discusses MRX with Congressman Rodney Frelinghuysen during the recent tour of the Lab.



# Brown is Guest Speaker at Science Fair Ceremony

**A**rea executives from nationally recognized research and technology institutions recently cleared a path to the podium for PPPL's Mary Ann Brown.

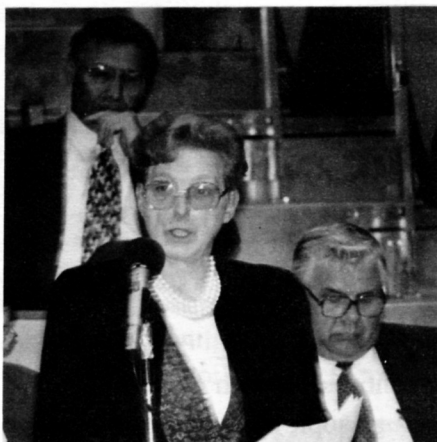
Brown was the guest speaker at the 43rd Mercer Science and Engineering Fair Awards Ceremony held at Rider University on March 12. The Engineers Club of Trenton, which sponsored the event, had invited Brown to speak at the ceremony that honored Mercer County grammar, middle, and high school students participating in the science fair.

PPPL Director Ronald C. Davidson said to Brown, "This is a terrific and well-deserved honor! We are very proud that you gave the welcome speech at the Mercer Science and Engineering Fair Awards Ceremony."

**"But win or lose, a project is a success when it demonstrates science can be fun and leaves the student transformed."  
—Mary Ann Brown**

In her opening remarks, Brown welcomed students, teachers, parents, judges, and guests, thanking the students for entering their science projects.

"Science and engineering fairs have increasingly become part of the American scene. It is estimated over one million student projects are undertaken each year in the United States, and there are fairs in more than 20 other countries," said Brown.



*Mary Ann Brown delivers remarks at the Mercer Science and Engineering Fair, which was held at Rider University in March.*

Continuing, she said science fair projects range from collecting and analyzing data to constructing ingenious devices emphasizing experimental skills. Winning projects, she added, share the characteristics of originality, logical consistency, depth, and clear presentation.

"But win or lose, a project is a success when it demonstrates science can be fun and leaves the student transformed," said Brown, noting that she spoke from the experience of having had two sons enter this science fair every year from sixth grade through their senior years, culminating in both winning grand prizes. Both went on to the International Science and Engineering Fair, with one capturing three first-place awards.

## Shaping National Goals

In closing, Brown encouraged this year's participants to think of their future roles in shaping national goals.

"Soon today's science fair participants will be empowered to help shape our national goals through their leadership and through the ballot box. One of these goals must be national

commitment to well-funded research programs — programs selected with vision and critical to continuing America's prosperity and security. Let us hope this is one small step toward that goal," she said.

Brown, who has been at PPPL since 1976, presently works for Michael Williams, Head of the Engineering and Technology Development Department. She said her children's involvement in Science Fairs over the years convinced her of their value to young people's career development in science and engineering. She is the mother of four grown children.

## Supported Science Fairs

For the past 16 years, Brown has supported the Greater Mercer Science and Engineering Fair, the North Jersey Regional Science Fair, and the Student Exposition on Energy and Environmental Resources Science Fair by serving as a judge and presenting Corporate Awards on behalf of PPPL. Brown is also an Affiliate Council Member and Treasurer of the New Jersey Council on Energy and Environmental Education. ●



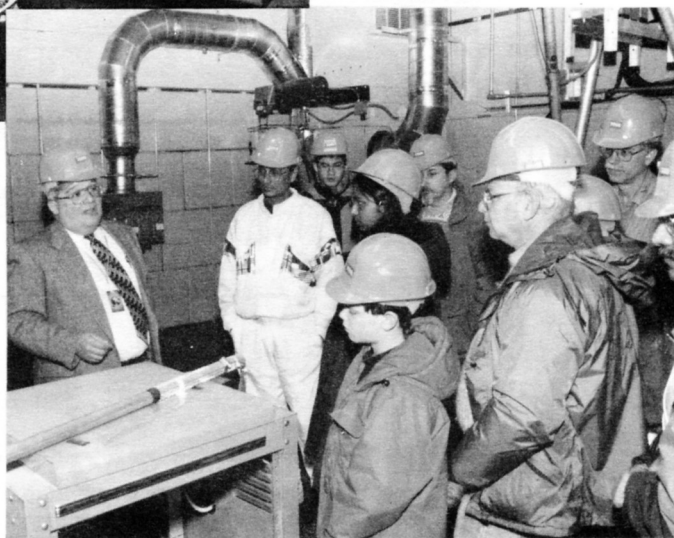
*Mary Ann Brown congratulates Patrick Skinner, son of PPPL's Charles Skinner, on receiving an "outstanding achievement" certificate at the Mercer Science and Engineering Fair.*



## Science on Saturday Wraps Up; Group Tours TFTR



The Science on Saturday lecture series at the Lab this winter wrapped up with a March 23 talk by PPPL's Michael Bell titled, "Building a Stronger Magnetic Bottle to Control the Fusion Energy Genie." The 12-year-old series that kicks off each January is hosted by the Lab and is geared toward high school students but open to everyone in the community. The final lecture this year concluded with a tour of TFTR, which more than 200 people took. At top, Bell delivers his remarks on fusion at the MBG Auditorium. At right, Phil Heitzenroeder (far left) leads a group on the tour.



## 1996-1997 Holiday Schedule

For Administrative and Support Staffs, Professional Library, Research and Technical Staff members:

Independence Day	July 4	Thursday
Labor Day	September 2	Monday
Thanksgiving	November 28	Thursday
	November 29	Friday
Christmas	December 24	Tuesday
	December 25	Wednesday
New Year's	December 31	Tuesday
	January 1	Wednesday
Memorial Day	May 26	Monday
Optional Holidays		Two additional

Optional holidays may be used at the staff member's discretion and with the approval of the supervisor for religious holidays and any other personal reason.

Alternate holiday arrangements may be made by departments and offices such as the Library and Dining Services where work schedules or union contracts dictate other holiday schedules.

# What's Happening at PPPL?



*The Director's Minority Advisory Committee (DMAC) "Brown Bag" Lunch drew dozens of PPPL'ers to the Commons on Friday, March 15. From left are Linda Harmon, Pat Buggs, Zelda Gassaway, and Arlene White. The DMAC Committee organized the informal lunch to give employees an opportunity to exchange ideas with the group. Members of the committee are: Pat Buggs, Linda Harmon, Chairperson Ron Hatcher, Bob Kaita, Pamela Lucas, Erik Perry, Maria Pueyo, Raki Ramakrishnan, and Bob Tucker.*

## In Memory

Retiree Alfred G. Swain died on March 24. Swain had been a construction engineer at the Lab for 12 years, retiring in 1986. He will be remembered for the lovely roses he brought in frequently for PPPL's reception desk.

## Thank You

*My family and I want to express our thanks for all the flowers, fruit, and sympathy and mass cards we received following the loss of my husband. I would like to add a special thanks for all the hugs and kind words I received from so many at the Lab. Thank you again.*

*—Jean Darazio  
(Cafeteria)*

## Classified



PPPL Director Ronald C. Davidson shows Ann McNeil (middle) and Geraldine Shannon around the Laboratory during a recent visit. Shannon works at Princeton University's Office of Government Affairs in Washington, D.C., and McNeil had been the Associate Director there.

**For Sale:** 1993 Dark green Dodge Dakota truck with extended cab; V6 automatic with two-wheel drive; loaded with extras; 18,000 miles. Asking \$12,700. Call Gene Baker at ext. 3231. After 6 P.M., call (609) 466-1152.

**For Sale:** Multi-room window unit air conditioner; 18,000 BTU; 220 volts. Good condition. \$150. Call J. Ignas at ext. 2673.

**For Sale:** Wolf Tanning Bed. Like new. \$1,000. Bamboo set with couch, two chairs, coffee table with glass top. Like new. \$700. Call Marilyn Hondorp at ext. 2656.

### Take Our Daughters to Work Day

*Employees are encouraged to assist the Laboratory in welcoming more than 40 girls who are visiting PPPL on Thursday, April 25, for "Take Our Daughters to Work" Day. Activities slated include mentoring, demonstrations, a speech, and a tour of TFTR. For more information contact Sue Hill at ext. 2227.*

## Annual Service Awards

About 150 employees were honored on Friday, March 22, during the 1995 Service Awards Ceremony at the MBG Auditorium. Honorees were recognized in the categories of five, ten, fifteen, twenty, twenty-five, thirty, thirty-five, and forty years of service at PPPL.

Said PPPL Director Ronald C. Davidson, "On behalf of the University and the Laboratory, I want to express our deep appreciation for your dedicated efforts during so many years of service."

Davidson noted that the past year has been a "difficult challenge" for the Laboratory, but said he was encouraged by the President's budget request for fusion in Fiscal Year 1997, which includes funds to operate TFTR and to begin construction of NSTX.

"This is a real measure of the Department of Energy's respect for the high quality of the staff and the numerous contributions to fusion science and technology made by PPPL over the years," said Davidson. "In short, it is a real tribute to all of your efforts, both recent and past, and a tribute to your ingenuity and the special skills that you bring to the Laboratory." ●



A decorative border of flowers and vines surrounds the text.

# Communiversality '96 Welcomes Spring!

**C**ommuniversality '96, the annual spring celebration of the arts, will overflow the streets of downtown Princeton on Saturday, April 27, between noon and 4 P.M.

The event, which is sponsored by The Arts Council of Princeton and the students of Princeton University, will unite town and borough residents, students, merchants, nonprofit organizations, performing artists, visual artists, and crafters.

Attendants will stroll through exhibits of art work, crafts for sale, musical and dance performances, stop by "Bookseller's Row" or "Cafe Corner," and learn about local nonprofit organizations.

If you have any questions, call The Arts Council of Princeton at (609) 924-8777.

Rain date for this event: Sunday, April 28, from noon to 4 P.M.

A graphic of a rolled-up banner with the text "PPPL Employees Welcome!"

**PPPL Employees Welcome!**