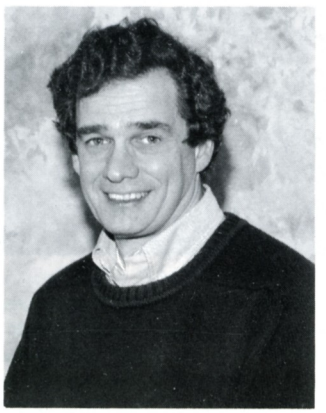
Princeton Plasma Physics Laboratory Vol. 20, No. 3 • December 18, 1998

HOTLINE

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

Neilson Named 1998 APS Fellow

In honor of his contributions to the field of plasma physics, PPPL scientist George "Hutch" Neilson was recently named a Fellow by the American Physical Society (APS).



Hutch Neilson

Neilson, a Principal Research Physicist, received the lifetime appointment from the APS's Division of Plasma Physics during the November APS meeting held this year in New Orleans. The APS rules limit the maximum number of Fellows selected each year to be no more than half of one percent of the Division membership.

Neilson, Project Manager for the National Compact Stellarator Experiment, was cited "For his pioneering work in the exploitation of magnetic equilibrium diagnostics and for his leadership in the physics design of fusion experiments."

Neilson received bachelor's and master's degrees in electrical engineering from the Massachusetts Institute of Technology in 1973 and a Ph.D. in physics from the University of Tennessee at Knoxville in 1979. He joined PPPL's staff in 1996, but from 1989 until 1996, as an Oak Ridge National Laboratory employee, he was a visiting fulltime participant in PPPL's programs.

PPPL Advanced Projects Head John Schmidt said of Neilson, "Hutch has many attributes that make him a leader in the U.S. fusion program. One that is particularly important at this stage in fusion research is his experience and expertise in working with U.S. and international fusion scientists on collaborative projects. He has been very successful at organizing and managing collaborative projects and is held in high regard by the fusion community for both his technical and managerial capability."●

PPPL Offers Intriguing Proposals to DOE Team

By Patti Wieser

PPPL may play a role in dismantling a defunct tritium production facility six times the size of a football field.

During the past year, the Department of Energy (DOE) designated the Mound Laboratory, a mostly underground facility in Miamisburg, Ohio, as a large-scale demonstration project and began looking for new dismantling technologies to test for effectiveness. Since then, a team of tritium experts, including PPPL's Keith Rule, was formed to develop and evaluate proposals for the technologies. This integrated contractor team is comprised of experts in various fields from other national laboratories.The DOE quit operating the Mound five years ago. Rule became part of the team after he and Steve Raftopoulos attended the Mound Tritium Decontamination and Decommissioning Forum in Ohio in 1997. Since that time, the two PPPL'ers have developed five proposals for demonstration at the Mound plant.

According to Rule, the team found PPPL's proposals "intriguing."

"These new technologies, along with the original proposals, all became of great interest to the team. Now we are continuing with proposal development and any preliminary evaluation at PPPL," he said.

Continued on page 3

PPPL Awarded for Small Business Participation

In recognition of its outstanding efforts to provide subcontracting opportunities to small buinesses, PPPL recently garnered an "Award of Distinction" from the U.S. Small Business Administration (SBA). Small businesses include small disadvantaged businesses and women-owned businesses. PPPL is one of 26 recipients out of 2,500 large businesses in the SBA's portfolio nationwide to have been honored with the citation. Representatives of the SBA presented the award to PPPL Director Rob Goldston on Monday, November 23, at the Laboratory. From left are PPPL Business Operations Head Ed Winkler, SBA Area Director for Government Contracting Jannette Fasano, SBA Commercial Market Representative Andrew Zuber, PPPL Procurement Head Rod Templon, PPPL Director Rob Goldston, SBA Regional Administrator for Region II Thomas Bettridge, U.S. Department of Energy Contracting Officer Raymond Kimble, and Deputy District Director of the SBA's New Jersey District Office James Kocsi.

HOTLINE

Editor/Writer: Patti Wieser
Photography: Elle Starkman
Graphic Artist: Greg Czechowicz
Layout: Patti Wieser

The **HOTLINE** is issued by the Princeton Plasma Physics Laboratory, a research facility supported by the United States Department of Energy. It is primarily an internal publication. Correspondence and requests to reprint material should be directed to the Editor, PPPL HOTLINE, P.O. Box 451, Princeton, NJ 08543; Interoffice correspondence should be addressed to Room B366, LOB Bldg., C-Site; fax 609-243-2751; telephone 609-243-2757; e-mail pwieser@pppl.gov

Women in Science

During a recent roundtable discussion at the Lab, four PPPL women in science and technology encouraged young women from Foxcroft School in Virginia to consider a range of career options now open to females. PPPL's Andrew Post Zwicker organized activities for the students. Lab participants in the talk included Virginia Finley, Martha Redi, and Phyllis Roney, visitor Boel Denne Hinnov, and moderator Pamela Lucas. From left are Roney, a student, Redi (holding newspaper), and another student. Discussing the progress of women in science, Redi showed a New York Times article, "Women in Antarctica," and noted that until recently women were not allowed to do research at the Antarctica research station.

Proposals

Continued from page 1

Of the five proposals, two were discarded because they already existed in a form of technology, but three are under evaluation, including a surface tritium monitor, a 55-gallon drum that removes tritium through bubbling, and a polymer-based absorbance that solidifies — and thus stabilizes — radioactive water for transportation and burial. Also under consideration is a pipe crimper to crimp capillary tubing. Such tubing was used to deliver tritium to the Lab's Tokamak Fusion Test Reactor (TFTR).

"Through environmental management funding, PPPL is managing some of the hazardous removal on TFTR, including capillary tubing. The crimper allowed us to safely remove the tubing," said Rule.

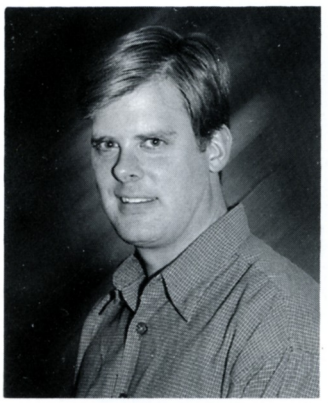
Rule noted that the Mound Laboratory has miles of capillary tubing, while PPPL had just a couple of hundred feet of it. The tubing at the Lab has since been successfully removed. PPPL's Charles Gentile and his group developed the pipe crimper.

The integrated contractor team meets quarterly and participates in monthly conference calls. Members have already selected some technologies that are not PPPL's and scheduled test planning for demonstrations.

From left are Steve Raftopoulos and Keith Rule with the pipe crimper.

Rule lauded the tritium community for working together. "This is a great group. We share information on tritium processing, clean up, and waste management, and are selecting technologies and incorporating them into test plans for the Mound." ●

Ernst Honored by APS for Doctoral Thesis



Darin Ernst

PPPL Associate Research Physicist Darin Ernst received the 1998 American Physical Society (APS) Award for "Outstanding Doctoral Thesis in Plasma Physics" during the APS Division of Plasma Physics Annual Meeting in New Orleans last month.

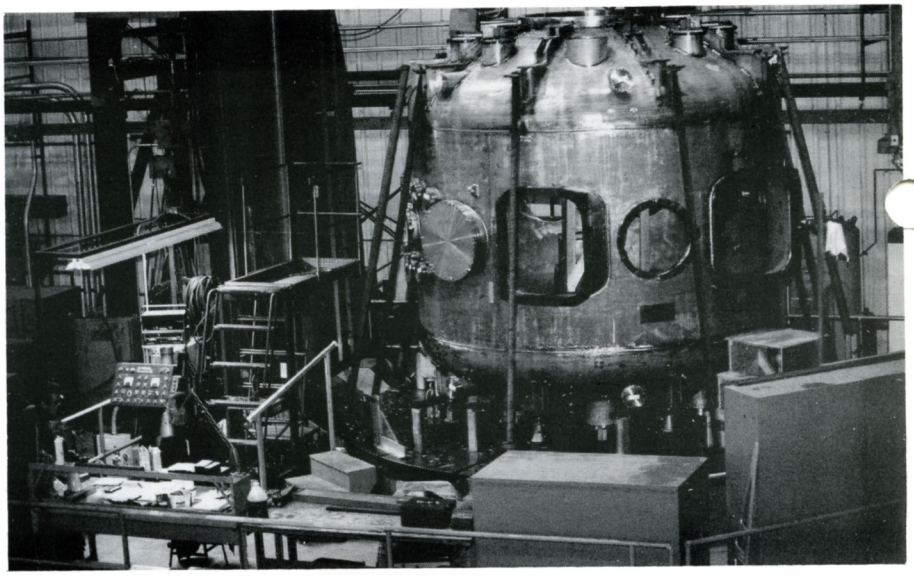
The APS citation honored Ernst "For elucidating the role of radial electric field shear in reducing local heat transport in supershot tokamak plasmas." The award was established in 1985 (originally as the Simon Ramo Award) to provide recognition to exceptional young scientists who have performed original thesis work of outstanding scientific quality and achievement in the area of plasma physics. It consists of a certificate and $2,000.

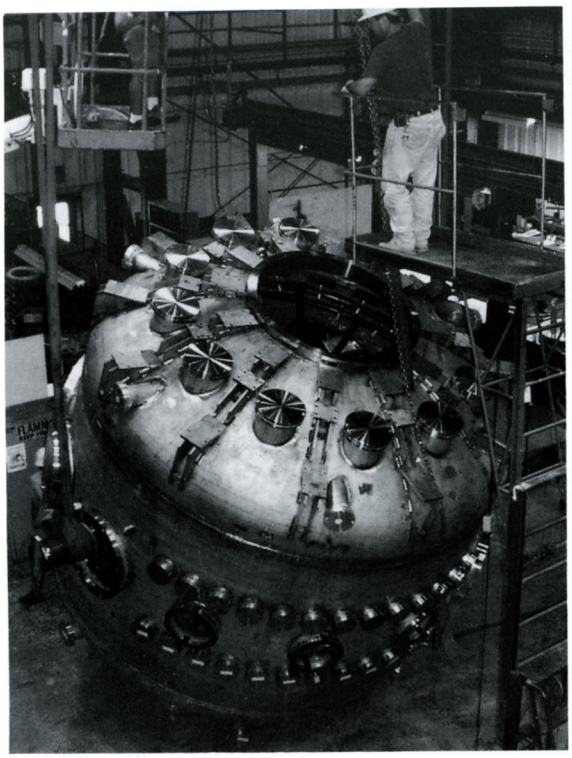
Ernst came to PPPL in 1992 and played an active role in the Tokamak Fusion Test Reactor (TFTR) Deuterium-Tritium(D-T) experiments through 1995 as part of his graduate work at the Massachusetts Institute of Technology (MIT). For his undergraduate work at the University of Wisconsin, he completed majors in physics, mathematics, and electrical engineering. After receiving a Ph.D. in physics from MIT in 1997, he joined PPPL's staff. He is now a member of the National Spherical Torus Experiment team and continues to collaborate on the Doublet III-D tokamak at General Atomics.

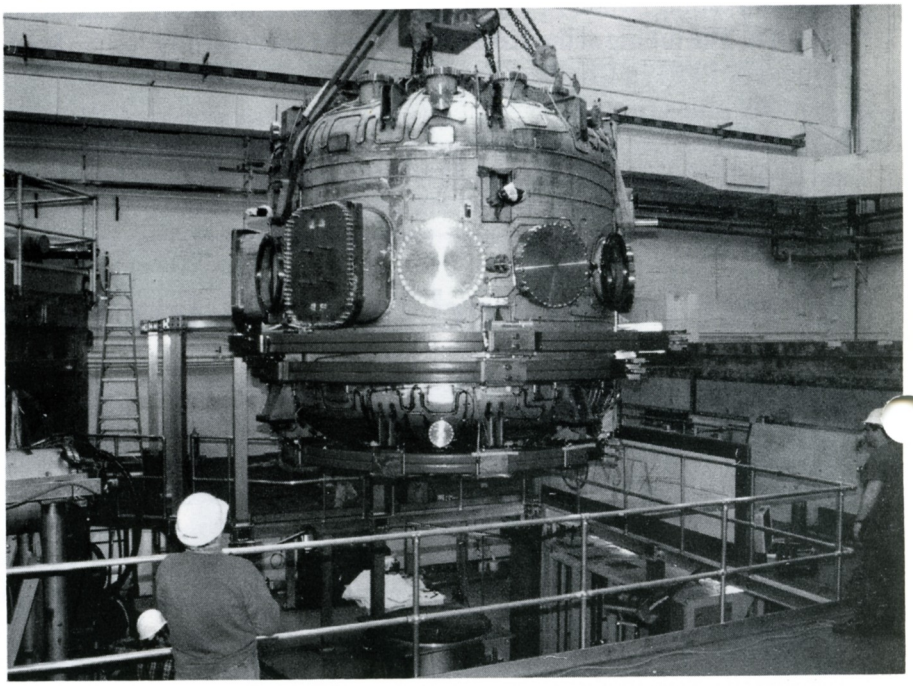
Phenomenon of Supershots

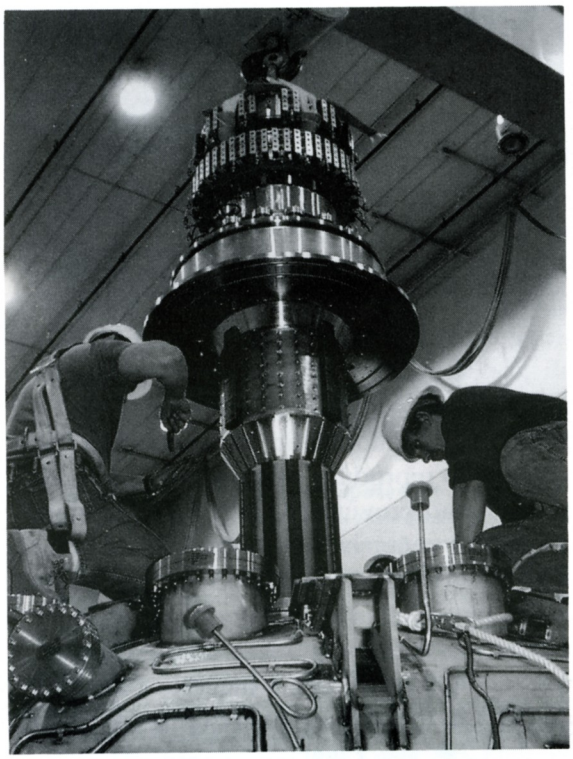
PPPL's Michael Bell said of Ernst, "Darin came to PPPL in 1992 to work with Steve Scott, who acted as his co-adviser, along with Professor Bruno Coppi of MIT. In addition, Professor Miklos Porkolab of MIT was Reader and also contributed. In his thesis, Darin developed a theory to describe the phenomenon of "supershots" in TFTR that was able to reproduce many features of their confinement which had previously eluded explanation. Darin's theory brings supershots into the fold of other enhanced confinement modes in tokamaks, such as the H-mode, where the suppression of turbulent transport by sheared flow improves the confinement. Along the way, Darin also contributed directly to the success of the D-T experiments in TFTR, developing many tools for rapid analysis of the data." ●

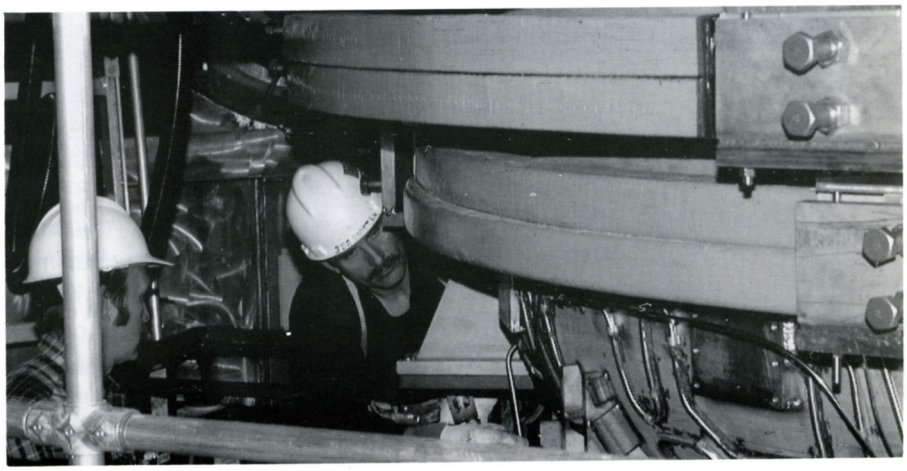
NSTX Update

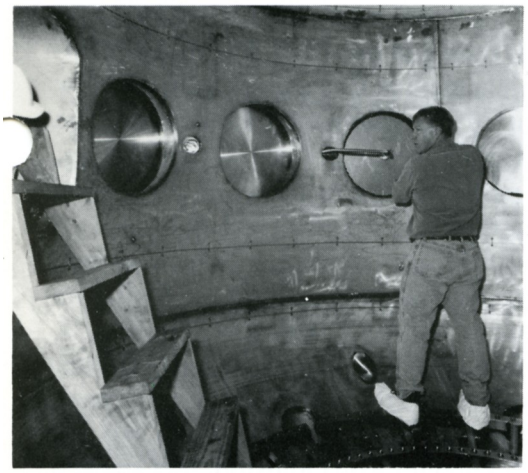


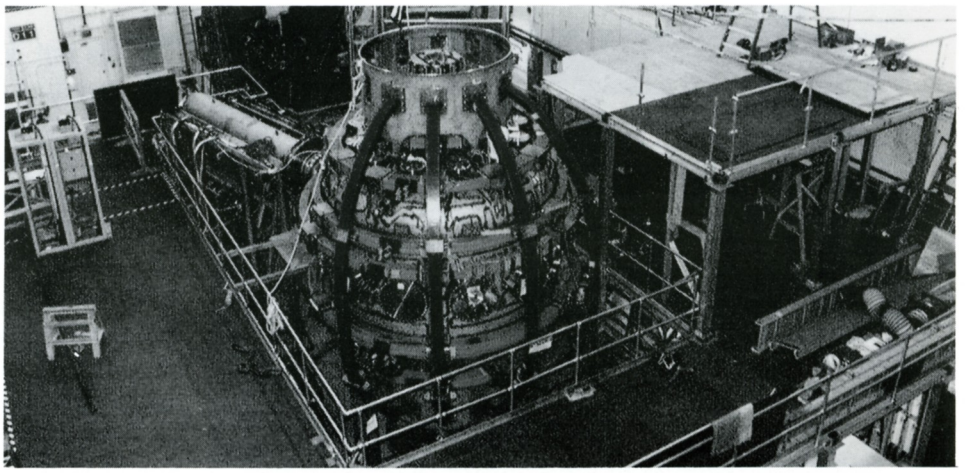


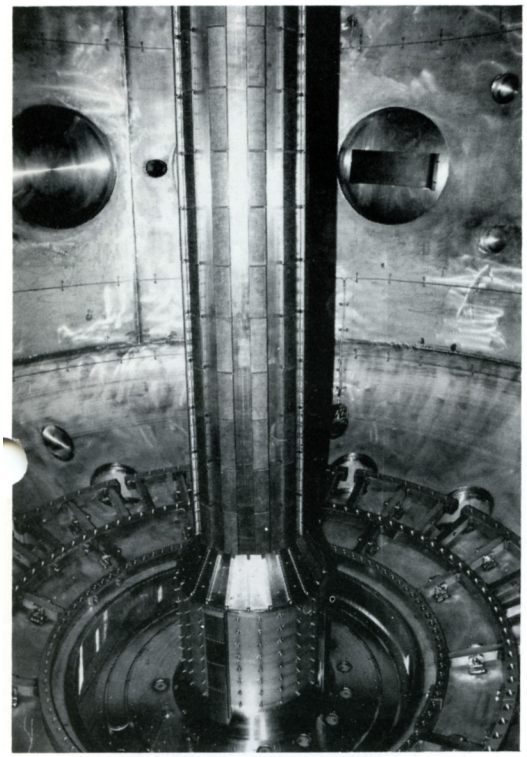




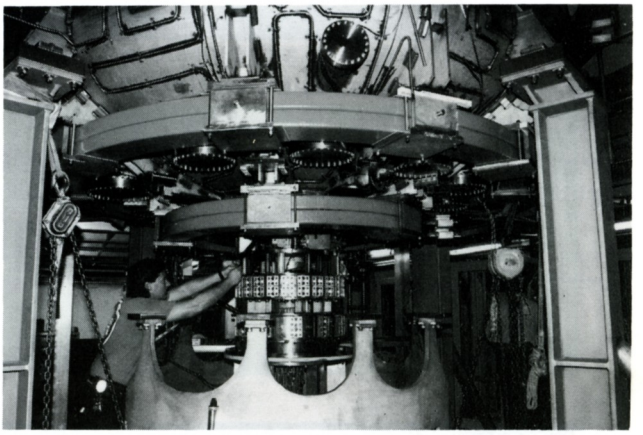


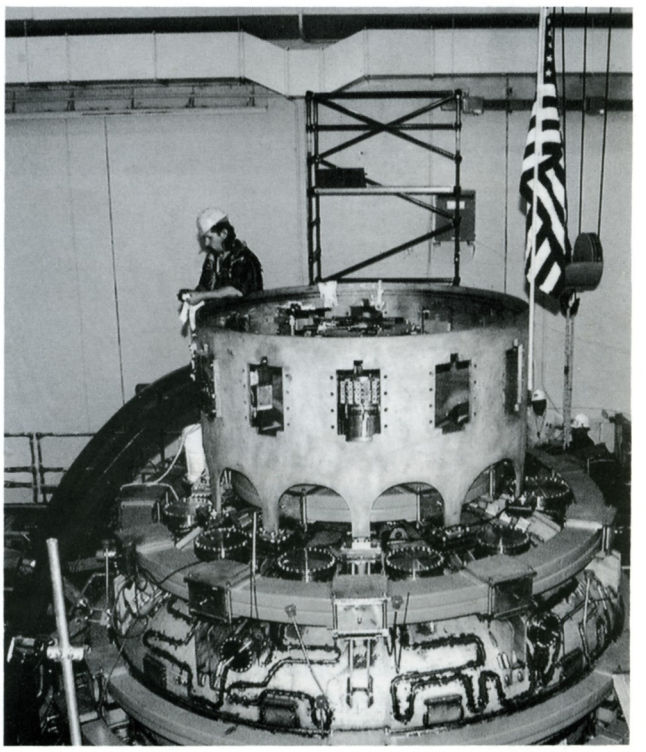


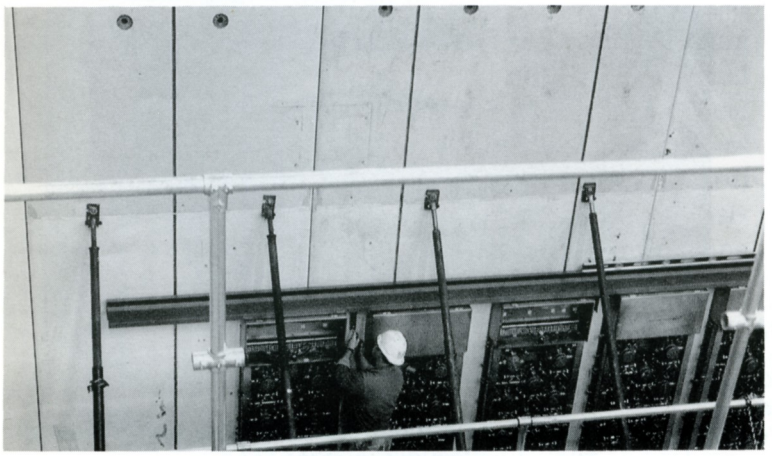




Progress continues on the construction of the National Spherical Torus Experiment (NSTX). Clockwise from top left (page 4), turning over the vacuum vessel; machining the vessel; lifting it into place; inspecting the vessel's legs; and installing the center stack; (page 5) leak testing the vessel; a view of the NSTX Test Cell; installing connections to the center stack; installing the outer toroidal-field coils; installing water racks; and an interior view of the vacuum vessel.





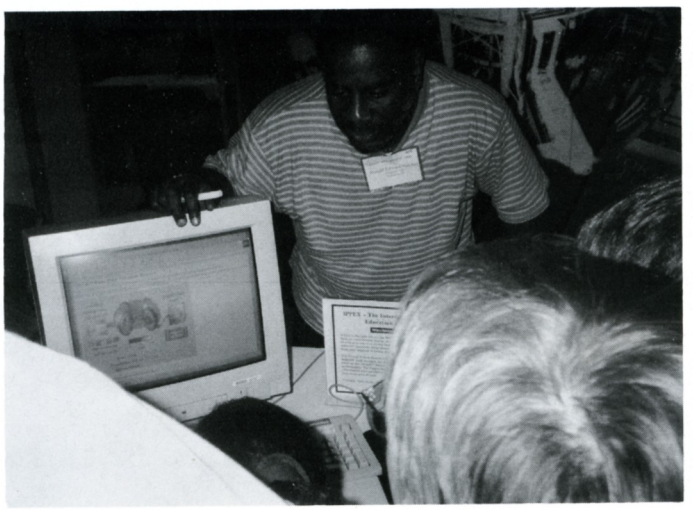


Lab Wins Award for Outreach Program in Recycling

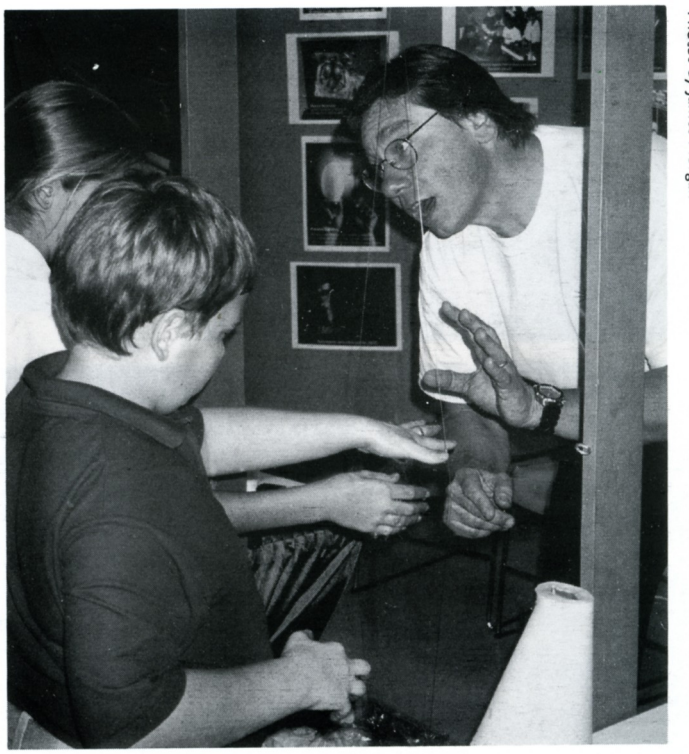
This fall, PPPL received the 1998 Award for "Outstanding Achievement in Recycling" from the New Jersey Department of Environmental Protection. The Laboratory was cited for its outreach efforts in recycling, and was noted, in particular, for its pollution prevention activities during Earth Week in April. The Lab sponsored a Pollution Prevention Poster Contest for students, as well as hosted 125 youngsters from area schools for "Pollution Prevention Awareness Day." PPPL's Thomas J. McGeachen and Margaret King, who organized the poster contest and events, accepted the award during a luncheon in September at the Princeton Marriott. From left are Scott Larson, PPPL Director Rob Goldston, McGeachen (holding the award), King, Rich Gallagher, and J.W. Anderson. ●

Science Bowl Volunteers Needed

Volunteers for the New Jersey Regional Competition of the National Science Bowl®, which will be held at PPPL on Saturday, February 27, are needed. If you are interested in serving as a judge, timekeeper, moderator, or scorekeeper, or could assist with logistics, please call James Morgan at ext. 2116.



In November, PPPL participated in the 1998 Plasma Expo and Science Teachers Day at the American Physical Society-Division of Plasma Physics (APS-DPP) annual conference held in New Orleans. PPPL's Henry Carnevale, John DeLooper, Ron Hatcher, Bob Heeter, Bob Kaita, James Morgan, Andrew Post Zwicker, Martha Redi, Barbara Sarfaty, and Ron Strykowsky, along with Rick Kessler of Princeton University's Office of Government Affairs in Washington, D.C., participated in the Expo, which drew more than 4,000 students. Post Zwicker, Morgan, and Peddie School teacher Nick Guilbert hosted 138 teachers during Teacher's Day. Above, PPPL's Ron Hatcher discusses IPPEX with a group.



Photos by James Morgan

PPPL's Ron Strykowsky demonstrates turbulence with a flowing bubble apparatus to young visitors at the Expo.

Materiel Control Celebrates Five Years Without Time-Lost Accident

In October, the Materiel Control Division celebrated a milestone — five years without a "lost-time" accident. The following month the group celebrated with a juice and cookie reception in the Warehouse, where PPPL Director Rob Goldston presented the staff with an "Outstanding Safety Performance" Award. A lost-time accident occurs when an employee is injured at work or becomes ill due to a work-related exposure and, as a result, cannot perform work activities. From left are J.W. Anderson, Jerry Levine, Chris Gillars, Rob Goldston, Matt Lawson, Jim Conover, Joyce Bitzer, Trevor Bayes, Fran Cargill, Spence Holcombe, Nelson Neal, and John Luckie. Not pictured is Jerry Siminoff. Congratulations to Materiel Control! ●

Above is one of PPPL's dual-fuel vehicles. During the next two or three years, PPPL expects to operate five to seven compressed natural gas vehicles.

Dual-Fuel Vehicles Arrive at PPPL

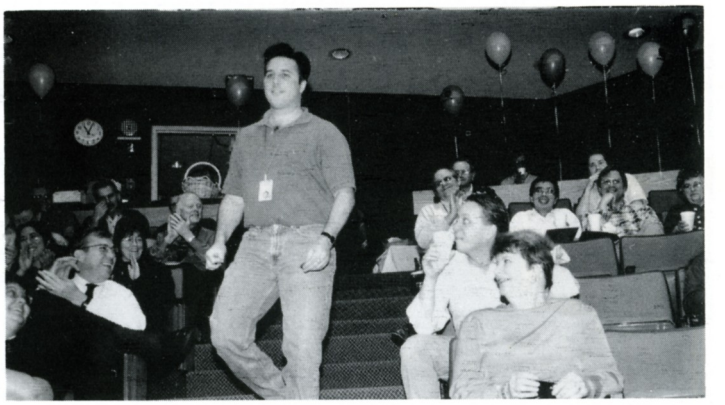
PPPL recently replaced two GSA gasoline vehicles with dual-fuel vehicles. These Chevy 2500 pickups use natural gas and gasoline for power. A natural gas tank is fitted in the bed of the pickup, which holds about 1100 cubic feet of natural gas equivalent to about 8.5 gallons of gasoline. When using natural gas, they run 50 percent cleaner, significantly reducing the problem of emissions. Since these vehicles are dual-fuel and are not dedicated to natural gas, they can be taken on long trips. ●

United Way Makes Giving Fun

How can giving to the community be so much fun? Through PPPL's United Way Campaign. As of December 9, employees contributed $17,939 to this year's drive at the Lab. About 36 percent of the staff participated in the annual fundraising effort.

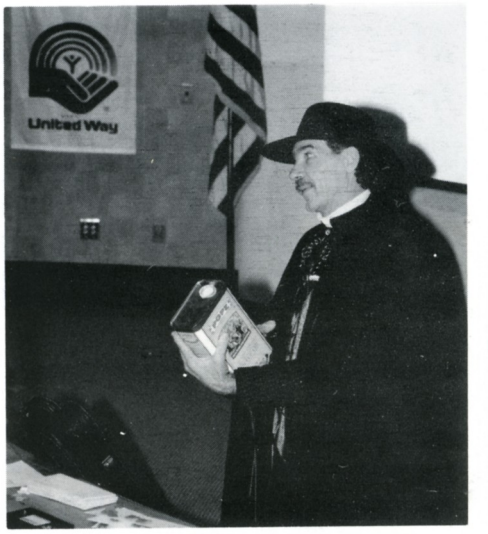
Throughout the month, staff enjoyed United Way activities, which included a slogan contest and culminated with the Campaign Meeting on December 1 at the MBG Auditorium. The gathering featured information about United Way programs presented by guest speakers, a short video titled "Circle of Hope," door prizes, and entertainment by Father Guido Sarducci.

As guest speaker Mark Lamar, of Family Guidance, noted, "Philanthropy can be fun." ●

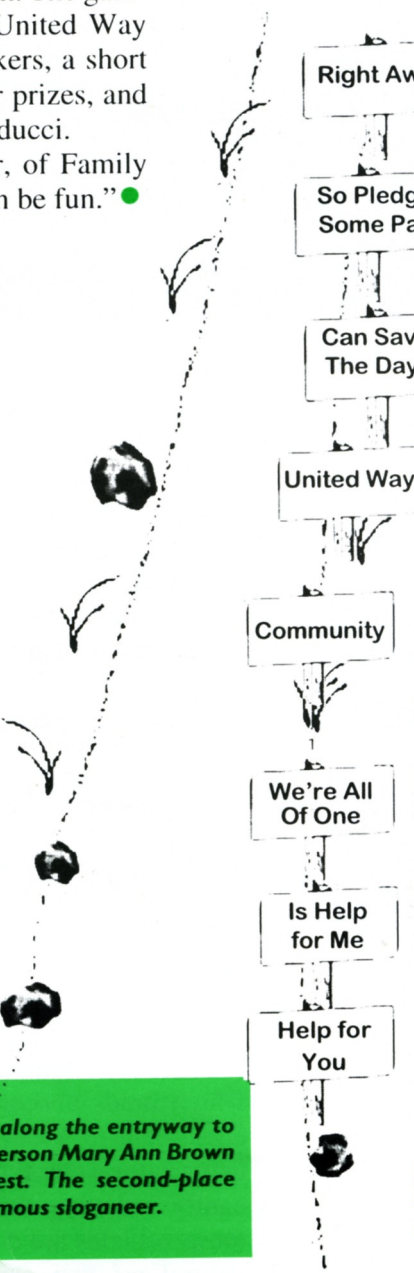


Rich Iavarone wins a door prize.

United Way representative Bobbie Kulp told staff, "I want to thank you — the donor — for investing in your community."



Father Guido Sarducci entertains the group.



The winning slogans were posted along the entryway to the Laboratory. Campaign Chairperson Mary Ann Brown received first place in the contest. The second-place winner was donated by an anonymous sloganeer.

John Luckie (at right) wins the holiday wreath donated by Mrs. Carl Potensky. PPPL United Way Campaign Chairperson Mary Ann Brown presents the prize to Luckie.