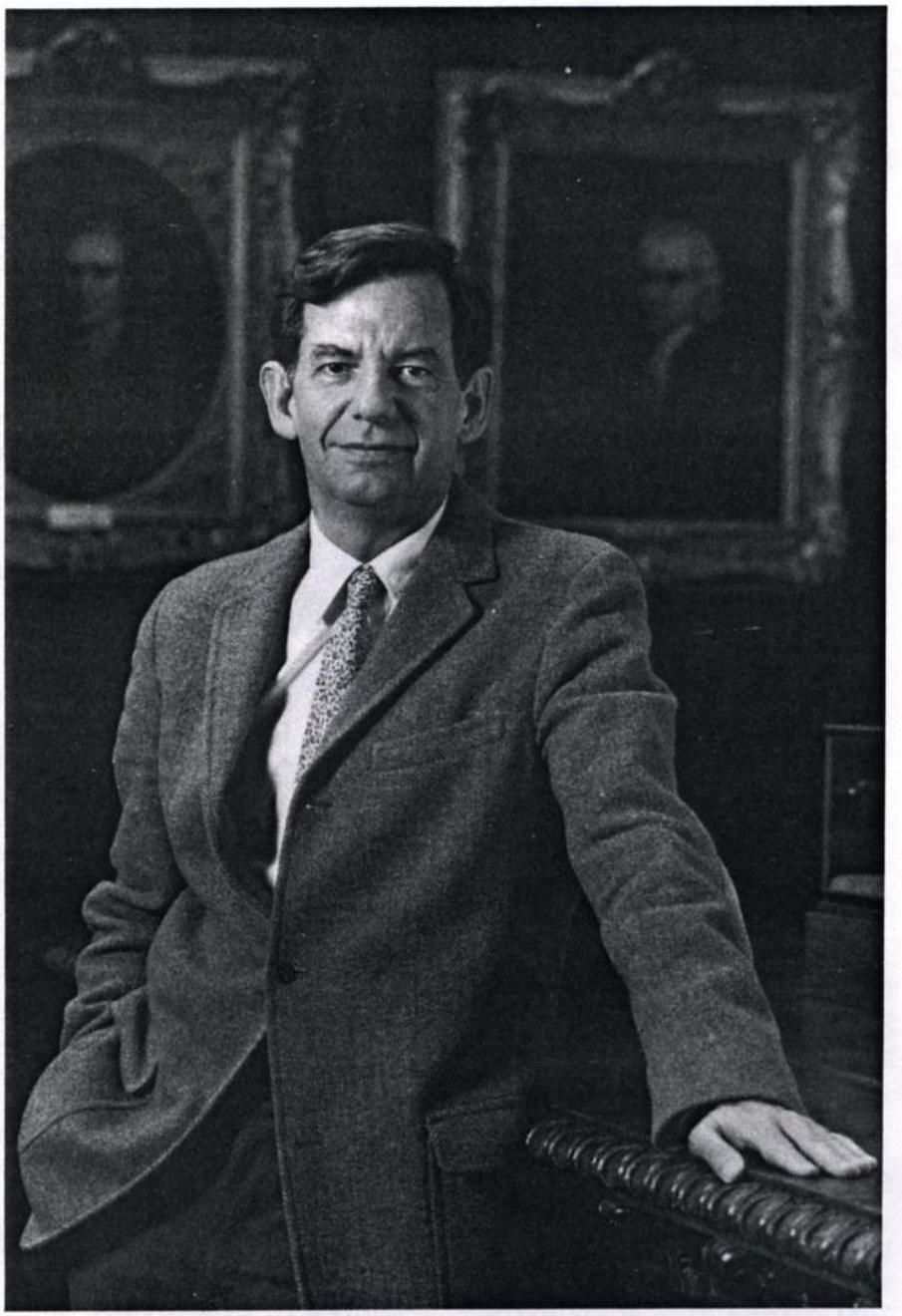
HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

Vol. 8, No. 1 October 3, 1986

MESSAGE FROM THE PRESIDENT



William G. Bowen

First of all, I want to express the pride Princeton University takes in the remarkable scientific results achieved by the Plasma Physics Laboratory this summer. We know that a long road still lies ahead, but all members of the University rejoice in your success and look forward to future accomplishments. I was particularly pleased to be able to tell the faculty, at their first meeting this fall, of the Lab's exceptional achievements. That aspect (alone!) of my report was greeted with warm applause.

The quest for practical fusion power has been the largest and most sustained scientific enterprise ever undertaken by Princeton. Many of the basic ideas underlying the magnetic fusion effort were developed by Lyman Spitzer and his associates in the Department of Astronomy over thirty years ago. The University has nurtured the effort through many stages of growth, leading finally to the successful construction and operation of TFTR. At present, we look forward to the development of an even more advanced device proposed by the Laboratory -- the Compact Ignition Tokamak (CIT) -- which will explore ignited plasmas with characteristics close to those needed for practical fusion reactors. The CIT is widely recognized as

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the next logical step in the world-wide program of advance towards the goal of fusion power.

In this context, I should like to review another development of major importance to the Laboratory that was recently brought to a successful conclusion. As you know, the University's contract with DOE to manage and operate the Plasma Physics Laboratory is subject to renewal at five-year intervals. This year, the contract negotiation was prolonged because it involved some fundamental issues that were difficult for everyone. These issues have now been settled in a way that is satisfactory to all parties. Let me review some of the important points:

- The government was anxious to clarify the status of land rights at Forrestal in view of its large investment in fusion facilities here, and the prospects for siting important experimental facilities at the Laboratory in the future. The University has now agreed to lease land at Forrestal C- and D-Sites to the DOE for a period of 40 years. The fair market value of the land, and hence the annual lease payment, are to be determined after appraisal by an independent party within the next 90 days and will be reappraised every five years thereafter. The 40-year lease arrangement places the land rights on a businesslike basis similar to arrangements for private-sector occupants at the Forrestal Center.

- DOE has indicated that it favors proceeding with the $300 million CIT project and designating Princeton as the logical site. Approval of the President and Congress must still be obtained next year, but DOE support on the CIT location and funding issues is a very important step forward.

- Both parties agreed to move expeditiously toward consolidation of Laboratory activities at C- and D-Sites. This will reduce the DOE's land costs over time, improve the effectiveness of Laboratory operations, and permit the University to review and optimize longer-term land use (particularly at A-Site) for commercial and research purposes. The agreement calls for relocation of the activities at A- and B-Sites by September 30, 1987.

- To provide the necessary additional space for the activities now located at A- and B-Sites, three approaches are being followed. First, a request for construction of a new high-bay building at C-Site has already been submitted to DOE; construction of this building is expected to be completed by next summer. Second, a joint PPPL/DOE planning effort for a new laboratory-office building is underway. Third, until the new laboratory-office building is available, space will be leased in nearby commercial office buildings.

Both the University and the DOE have, through this agreement, underscored their long-term commitment to the development of the Laboratory. As in the case of the other DOE laboratories, the Department has the right to consider at the time of each five-year renewal of the PPPL contract whether Princeton University should continue in its management role, or whether the management of the Laboratory should be opened competitively to other parties. The University fully expects to retain the PPPL contract through the 40 years of the new lease, and to strengthen the ties between the Main Campus and the Laboratory.

The new contract will not result in any change in the relationship between Princeton University and its employees at the Laboratory. PPPL employees will retain the same rights and benefits as under previous contracts. The consistency of Laboratory and University personnel policies was a fundamental objective of the University throughout the negotiations.

In sum, the University remains fully committed to its fusion research effort at Forrestal Campus and to its staff at PPPL, who are performing such important services to science and to the nation. Such services are consistent with the best traditions of Princeton.

I know that the consolidation at C- and D-Sites places an unusual burden on PPPL managers and staff, and I appreciate your understanding and support. The long-term result will be a more efficient Laboratory, backed by strong commitments to its future by both the University and the DOE.

William G. Bowen

Invention Update

In 1981, PPL established a Patent Awareness Program designed to recognize creative inventors and to raise the patent-mindedness of laboratory staff. A Committee on Inventions makes cash awards to inventors for their new or novel ideas. Additional monies are awarded if a patent application on the discoveries is filed.

Patent applications filed since May include:

- Large Angle Optical Scanning by a Curved, Static, Steering Mirror, by A. Ramsey
- Tokamak Device Configurations for Laser Pumping, by D. Jassby
- A Software Package for Controlling Stellarator Equilibrium, by A. Reiman and H. Greenside
- Method for Breaking Up Chemical Wastes by Bombardment of Plasma Ions on Metallic Walls, by R. Motley and W. Langer
- High Current Density, Cryogenically Cooled Sliding Electrical Joint, by H. Murray
- Coil for Production of Optimum Magnetic Fields, by J. Faunce
- Differential Atmospheric Tritium Sampler, by O. Griesbach and J. Stencel
- Coil Protection Calculator, by R. Woolley
- Pico-Second Delay Timer, by L. Meixler, K. Ilcisin, J. Robinson, W. Tighe, and L. Guttadora
- Right Angle High-Voltage Connector, by S. Kilpatrick and M. Dereka
- Personal Computer Equipment Antitheft Device, by T. Kozub and K. Kugel
- Perforated Toroidal-field Coils for Maximizing Neutron Transmission, by D. Jassby
- Woodruff Key Extractor, by R. Pope

For further information about invention disclosures or the patent process, contact Meg Harmsen at ext. 2659.

TRANSITIONS

The HOTLINE offers its congratulations to the following employees, who recently became proud parents:

Eric Fredrickson of TFTR and his wife, Laura, whose daughter, Nicole, was born September 4;

Bill Davis of the Computer Section and his wife, Deborah, whose son, Christopher, was born September 8.

United Way

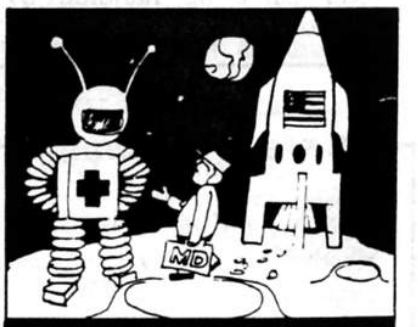
AT WORK

Fitness On The Run

"I'd like to get in better shape, but I just can't seem to find the time."

You've heard -- or even used -- that excuse before. Here are some suggestions on how you can work exercise into your busy schedule:

- Park your car a block of two from your destination, or get off the bus or subway a few stops early and walk the rest of the way. If traveling a short distance, walk or use your bicycle.
- Pass up the elevator or escalator whenever possible and take the stairs instead.
- While watching television, don't just sit there. Run in place, do sit-ups, or work on flexibility.
- Do some manual chores every day, like gardening, mowing the lawn (not on a tractor!), walking the dog, or washing the car.
- When you travel, always pack a pair of walking shoes or a jump rope.



HEALTH QUEST

There is no such thing as fate as far as accidents are concerned. The idea that accidents are unavoidable and will always happen is wrong. In fact, any accident can be avoided by plain, everyday common sense. The trick is to encourage other people to use their heads and safeguard themselves and others from accidents.

Many accidents on the job can be avoided by following sim-

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ple safety rules and using good common sense, such as:

- Learning the right way to do your job;
- Working at a speed consistent with safety;
- Not jumping from one elevation to another;
- Removing protruding nails, or bending them over;
- Staying away from machines you have not been taught to operate;
- Using only tools that are in good condition;
- Reporting any defective ladders;
- Lifting with your legs, and asking for help when the load can't be handled by only one person;
- Keeping your work places and access routes clean and clear;
- Using safety goggles when the job calls for them;
- Not attempting to repair or replace electrical equipment unless it is part of your regular work;
- Treating all electric wires as live wires; and
- Making sure all electric portable tools are in good condition and properly grounded.

Keep in mind that accidents are caused by thoughtlessness -- yours or someone else's. When an accident occurs, it's because someone failed to see that it could happen. If you think ahead of the possible hazards that may confront you, you can plan how to avoid them.

Notary News

Staff members seeking a notary public need look no further than C-Site. Vianna Gleaton (Module I, Room 110) and Kris Mann (office L244) are both notaries. To make an appointment to have documents notarized, call Vianna at ext 2367 or Kris at ext. 3179.

The PPL HOTLINE is issued by the Princeton University Plasma Physics Laboratory, a research facility supported by the United States Department of Energy. Correspondence should be directed to PPL Information Services, Module 2, C-Site, James Forrestal Campus, ext. 2754.

Safety Training

The Occupational Medicine and Safety Office has scheduled the following training courses for October:

Fork Lift Training: October 9, 9 a.m. to noon

Lockout/Tagout Procedures: October 16, 1-3 p.m.

Basic First Aid: October 21, 9 a.m. to noon

Proper Use of Fire Extinguishers: October 22, time to be announced

Lockout/Tagout Procedures: October 23, 1-3 p.m.

Employees must obtain permission from their immediate supervisor to attend any course. Supervisors must call Mary Ann McBride at ext. 3468 to enroll their employees. Attendees will be notified of the time and place their class meets one week before each session starts.

PPPL HOTLINE
PRINCETON PLASMA PHYSICS LABORATORY
Vol. 8, No. 2 October 31, 1986

UNITED WAY CAMPAIGN UNDERWAY

Jim Gramlich, campaign chairman for the United Way-Princeton Area Communities, welcomes volunteers to the kickoff meeting which began PPPL's 1986 United Way fund drive.

Growth in giving as an expression of the laboratory's community concern was the message delivered to volunteers attending Monday's kickoff meeting for the annual PPPL United Way fund drive.

Administrative Operations Deputy Director James Clark, PPPL's United Way campaign chairman, welcomed volunteers to the October 27 meeting by pointing out that "This laboratory doesn't sponsor many community activities, but we very strongly support the United Way. We are indebted to our campaign leaders and volunteers for spearheading this community effort."

Clark added that "The laboratory is a service organization by the very nature of its effort to develop fusion power as a safe and practical energy source for the longer term. At the same time, I urge you not to forget the agencies involved in caring for human needs here and now by giving to the United Way."

To help attain the total campaign goal for the United Way-Princeton Area Communities of $2.1 million, PPPL is striving for a goal of 50% participation, which means 190 new pledges. "That won't be easy," Clark admitted, "but we're especially interested in those who haven't given before. We do want to ensure that everyone has the opportunity to contribute. At the same time, we're striving to increase the pledges from those who are already United Way givers by 10%."

Laboratory Director Dr. Harold Furth reminded the volunteers that last year PPPL's United Way participation rate increased from 11% to 32%. The 21% rise earned the laboratory its first United Way Gold Award. "But beyond awards," the director continued, "I think there is something fundamentally wise

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about helping the community. I personally have the superstition that if we are willing to help the community, then something good will happen to us too. I propose we should keep pushing on this particular superstition, and be even more generous this year. When you add the idealistic factor and the coming change in the tax law, this is certainly a good year to give."

Jim Gramlich, Director of the American Cyanamid Corporation's Agricultural Research Division, is the campaign chairman for the United Way-Princeton Area Communities. He believes there's "a very strong correlation between the health of an organization, its morale, its strength, and the amount that organization gives to the United Way." With the need for human services growing along with the growth of the Princeton area itself, the United Way has been hard-pressed to keep pace with that growth.

"The growth in this area has been explosive," Gramlich continued, "and the goals and objectives our agencies have set is part of a noble cause. I urge all of you to help us, and I can assure you that we sincerely appreciate your support."

Gilbert Phillips, Associate Executive Director of the United Way-Princeton Area Communities, urged employees who live outside the Princeton area to continue giving at the office because it benefits their home communities as well. Volunteers from various PPPL "neighborhoods" have distributed pledge cards to employees in their work areas. Anyone who needs additional pledge cards can contact Rosemary Fuccello in Personnel, ext. 2041.

Coverage Changes

Any PPPL employees making changes in their medical coverage can do so by seeing Eleanor Schmitt in Personnel from November 17 to 26.

Eleanor's office is Room 121 in Building 1-O on A-Site. Appointments for coverage changes should be made between 9 and 11:30 a.m., or from 1:30 to 4:30 p.m.

United Way Time Capsule

The idea of supporting several agencies by contributing to the United Way isn't a new one. The United Way-Princeton Area Communities has been serving people for 48 years, although it was originally known as the Community Chest.

The group's first fundraising campaign was held in 1938. Back then, 300 volunteers in Princeton Borough & Princeton Township raised nearly $70,000 to support 11 agencies. Six of those original 11 agencies -- the Boy Scouts, the Girl Scouts, the New Jersey Childrens' Home Society, Princeton Nursery School, the Princeton YMCA, and the Princeton YWCA -- are still part of the United Way.

But times change, and so has the United Way. The organization grew in response to growing community needs. Today the United Way is funding 27 agencies, including its partner, the American Red Cross-Princeton Area Chapter. Last year, 1,500 volunteers helped the United Way raise $1,943,079.

Now it's your turn to make a little history. Help the United Way reach its goal of $2.1 million by giving generously during PPPL's United Way campaign.

Jack Joyce

Jack Joyce is one laboratory staff member who doesn't need to be convinced of the United Way's value. Jack, Head of the Engineering Department, is a longtime contributor and member of the United Way's Board of Trustees.

Jack has worked for the organization in an unofficial capacity for more than 30 years. He joined the United Way's Board of Trustees last year when the group sought a representative from the PPPL area.

The Board, which meets once a month in general session, sets the framework for much of the organization's work. Trustees oversee the addition or withdrawal of agencies from the United Way. They serve as the nucleus for both the solicitation and allocation subcommittes.

The Board is petitioned to support a variety of projects, and dispenses supplemental

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United Way funds on a "one-shot" basis. They have been approached for money to repair a leaky roof for one agency, and to replace a broken swimming pool filter for another.

The trustees also participated in the recent search for a new United Way staff director. Although Jack was not directly involved in the process, he called it "an exhaustive effort," and likened it to having to fill a high-level vacancy here at the laboratory.

In the future, the trustees will be considering the effect of the recent tax reform bill on the organization. Jack pointed out that although many deductions for major charitable contributions have been eliminated, the United Way has traditionally derived the majority of its funds from small donations made by people who give on a true need basis rather than on a tax basis. For that reason, United Way funding may not be impacted as severely as other charities that rely on substantial individual gifts for a large portion of their funding.

Jack would like more PPPL employees to consider giving to the United Way. "I got involved with the United Way because its activities are so prominently featured in the workplace here at Princeton. (The laboratory) realizes that it benefits by its association with the United Way."

However, Jack feels there are more important reasons for contributing to the United Way. "The United Way is a healthy and vigorous organization," Jack continued. "If you haven't received benefits from it, your family, your friend, or your neighbors probably have. We have to recognize what an integral part of the total picture the United Way is. If United Way support was denied to many of these agencies, there'd be a big void left behind. Just look at the contributions the United Way and its sister organization, the Red Cross, make during disasters. What if they weren't there?"

"Whether you're aware of it or not, at some point in your life you're probably going to avail yourself of the help of an agency that benefits from the United Way. I think people should look at supporting the United Way in that light. Step back and look at the services the United Way helps provide, then consider how much you feel they benefit the community, and make your contributions based on that decision."

United Way: A Sound Investment

The United Way-Princeton Area Communities serves over 38,000 people who live or work in Cranbury, East Windsor, Griggstown, Hightstown, Kingston, Montgomery, Plainsboro, Princeton, Rocky Hill, West Windsor, and adjacent areas of Hopewell, Lawrence, and South Brunswick Townships. Its 27 member agencies provide more than 130 services ranging from day care and family counseling to disaster relief, drug abuse treatment, and help for the physically and mentally handicapped. There's something for everyone under the United Way umbrella.

Two major factors set the United Way-Princeton Area Communities apart from many other worthy charities:

1. Anyone who lives or works in the United Way service area is eligible for services. No one is denied service because of an inability to pay, and the variety of services available through the 27 member United Way agencies are services that most people will need at one time or another.

2. To operate the local United Way takes only about 11 cents out of every contributed dollar. Administrative costs can be kept low thanks to extensive volunteer involvement in all phases of the United Way, including the campaign itself, budgeting, planning, and agency allocations. The United Way-Princeton Area Communities employs only five paid

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staff members, but receives additional help from 1500 volunteers.

And the savings don's stop there. United Way member agencies conserve public funds by lessening dependence on costly public programs, and by providing services that help reduce welfare and medical costs.

Vital services provided with minimal administrative costs -- doesn't that sound like a great investment?

Member Agencies

Your contribution to the United Way-Princeton Area Communities will allow the following 27 member agencies to continue providing their invaluable aid:

American Red Cross -- Princeton Area Chapter

Association for the Advancement of Mental Health

Better Beginnings Child Development Center

Big Brothers/Big Sisters of Mercer County

Boy Scouts of America -- George Washington Council

Camp Fire -- Lenni Lenape Council: Latchkey Program

Catholic Welfare Bureau: Child Abuse/Family Violence Program

Children's Home Society of New Jersey

Community Guidance Center of Mercer County

Crawford House

Deaf Contact

Delaware-Raritan Girl Scout Council

Family Counseling Service of Somerset County

Family Service Agency of Princeton

Florence Crittenton Home

Jewish Community Centers of the Delaware Valley

Jewish Family Service of the Delaware Valley

New Jersey Association for Retarded Citizens

Princeton Area Council of Community Services

Princeton Community Homemaker: Home Health Aide Service

Princeton Nursery School

Rolling Hills Girl Scout Council

University-NOW Day Nursery

Case Histories

If you've ever wondered what impact your United Way contributions have, consider these case histories:

- Liz, 23, is retarded. While living with her family, she had never been employed. Through a service of the Association for the Advancement of Mental Health (AAMH), she received a job with a local corporation. AAMH located an appropriate position, trained her at the job site, and monitored her progress both directly and through her supervisor. Liz has now been successfully employed for six years. Because of her job and her continuous contact with AAMH, Liz is able to lead a semi-independent life in the community.

- Donna, a single 20-year-old who had been a victim of her stepfather's sexual abuse while a youngster, has been drinking since age 12. She had a sporadic work history. Donna's mother recently left her husband, trying to establish an independent life on her own. With no other place to go, Donna went to stay at Crawford House, where she is learning to live alcohol-free. With support from Crawford House, she is making plans to get a job and lead an independent life.

- Jim, 80, and his nephew Tom, 60, lived together. Jim was blind, a diabetic with severe circulatory problems of the feet, and crippling arthritis. Although his nephew was a

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deaf mute, he was able to minimally assist him. Then Tom suffered a stroke which left him paralyzed on one side. While he was in the hospital, there was no one to take care of his uncle since Medicare services to him had been exhausted. With United Way monies, Princeton Community Homemaker's Home Health Aide Service was able to offer homemaker and home health aide services to this blind, crippled man.

As these stories illustrate, your contributions can transform a bleak today into a hopeful tomorrow when you give to the United Way.

United Way Q & A

Question: Why should I give?

Answer: One reason involves our moral obligation to help others who need our aid. Giving is also a form of self-protection; we never know when we, or someone we love, may need the helping hand United Way agencies offer. Your "policy" of giving to the United Way serves as the "premium" that helps "insure" vital services will be available in times of need.

Question: Doesn't Big Business give the United Way all the money it needs?

Answer: Over 130 services are provided through United Way dollars. Raising the money needed to fund that wide range of human services would be a financial impossibility without individual contributions.

Question: The United Way doesn't need my money; doesn't the government take care of everybody?

Answer: In some countries, that's true. But here in America, voluntary support, including your gifts, has traditionally played a very large role in helping people help themselves. Actually, most of us complain about our taxes now, but if the government were forced to provide all our services, we could really expect our taxes to soar.

Since the job of helping is so massive, it takes the government's tax-supported programs coupled with the contribution-supported programs of the United Way to meet the total community need. We all realize that the government is cutting back on its role in providing human services, but that doesn't mean the need for services will disappear. It just means that services will have to be provided by other sources -- such as the United Way agencies.

Question: Is the United Way in my community the same as in all the others?

Answer: United Ways are similar, but each operates autonomously. Each is controlled by a board of directors consisting entirely of volunteers from the community. These citizens serve year-round, without pay, to set policies and to guide the proper and effective operation of the United Way organization. However, all United Ways share the mission of "increasing the organized capacity of people to care for one another."

Question: If I don't live in this area, why should I contribute to the Princeton United Way?

Answer: Since you work in the area serviced by the United Way-Princeton Area Communities, you and your family are eligible for services from all United Way member agencies.

If everyone contributes to the United Way where they work, all communities will be assured of the availability of necessary services. Giving where you work also allows you to use payroll deduction, which is a "painless" way of contributing.

Question: How are funds distributed to agencies in the community?

Answer: The central feature of funds allocation is a process called "citizen review," which is unique to the United Way. Volunteers serve on United Way Planning and Allocations Committees. They assess changes in community needs, anticipate future needs for services, evaluate present services and programs of agencies, consider proposals for new agencies or for new programs, study the agencies' annual budgets and audits, determine the United Way funds required, and recommend the amount of United Way financial support for each agency. This citizen review process helps make the United Way and the agencies it supports accountable to the general community. All allocations decisions are made public. United Way is prepared to explain exactly how contribu-

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tions are invested in the community's health and welfare. Such accountability is the foundation of United Way's credibility.

Question: Don't the United Way agencies charge for their services?

Answer: Of course they do, because the United Way cannot support all the financial needs and expenses of its member agencies. The agencies need far more money than what the United Way could possibly raise, and to get this additional money, they charge fees to people who can afford them, which is only fair and logical. The fees are determined by an individual's income; thus, the lower the income, the lower the fee. United Way dollars ensure that no one will be refused services simply because they cannot afford to pay the full cost.

Question: Why didn't someone I know receive help from a United Way agency?

Answer: The United Way agencies never turn down anyone who needs help. So get all the facts -- names, dates, all the relevant information -- then call the United Way. It will thoroughly check out all complaints. In the past, United Way investigations have proved such complaints unfounded.

People Helping People

This United Way symbol, three people with joined hands, carries a simple message: people helping people.

It's true that more detailed reasons for giving to the United Way can be found. Yet at its most basic level, the United Way stands for a simple human response: people reaching out to one another in times of need. People helping people.

So reach out, and give to the United Way!

United Way Editorial

This year's slogan for the United Way fund drive is "With your help, there is a way." Especially this year, your contributions may be the only way to maintain the wide range of services currently available through the United Way-Princeton Area Communities.

The rapid development occurring throughout the Princeton area is attracting more people to its surrounding communities. The population increase places a heavier demand on United Way agencies striving to meet the needs of all area residents.

At the same time, federal budget cuts in human service programs continue to financially strap agencies delivering vital human services. The push of an increasing need for services coupled with the pull of reduced federal funding is literally ripping some agencies apart.

That's where the United Way comes in. The United Way can mend those rips, "insuring" that services will be available when we need them. The United Way isn't a charity; rather, it unites a large group of service agencies into a cohesive unit. You'll find day care, family counseling, disaster relief, substance abuse treatment, job training and guidance, help for the handicapped, assistance for the elderly, and many other services under the United Way banner. Many of us never expect to have to turn to the United Way for assistance, but it's comforting to know these professional services are available.

But caring for others costs money. By increasing your United Way contribution by only 10%, you'll be paying your part of the "premium" to keep those essential services coming. That's not much to ensure that the United Way remains an integral part of the Princeton area, especially if use the payroll deduction plan.

You can say, "my contribution isn't going to matter." What if everyone said that? So please give generously when your PPPL United Way volunteer contacts you.

What Your Dollar Buys

$5 a week buys:

- Four weeks of safe shelter for a battered woman
- Counseling sessions for six alcoholics and their families
- Nine hours of training for a blind person learning braille

$10 a week buys:

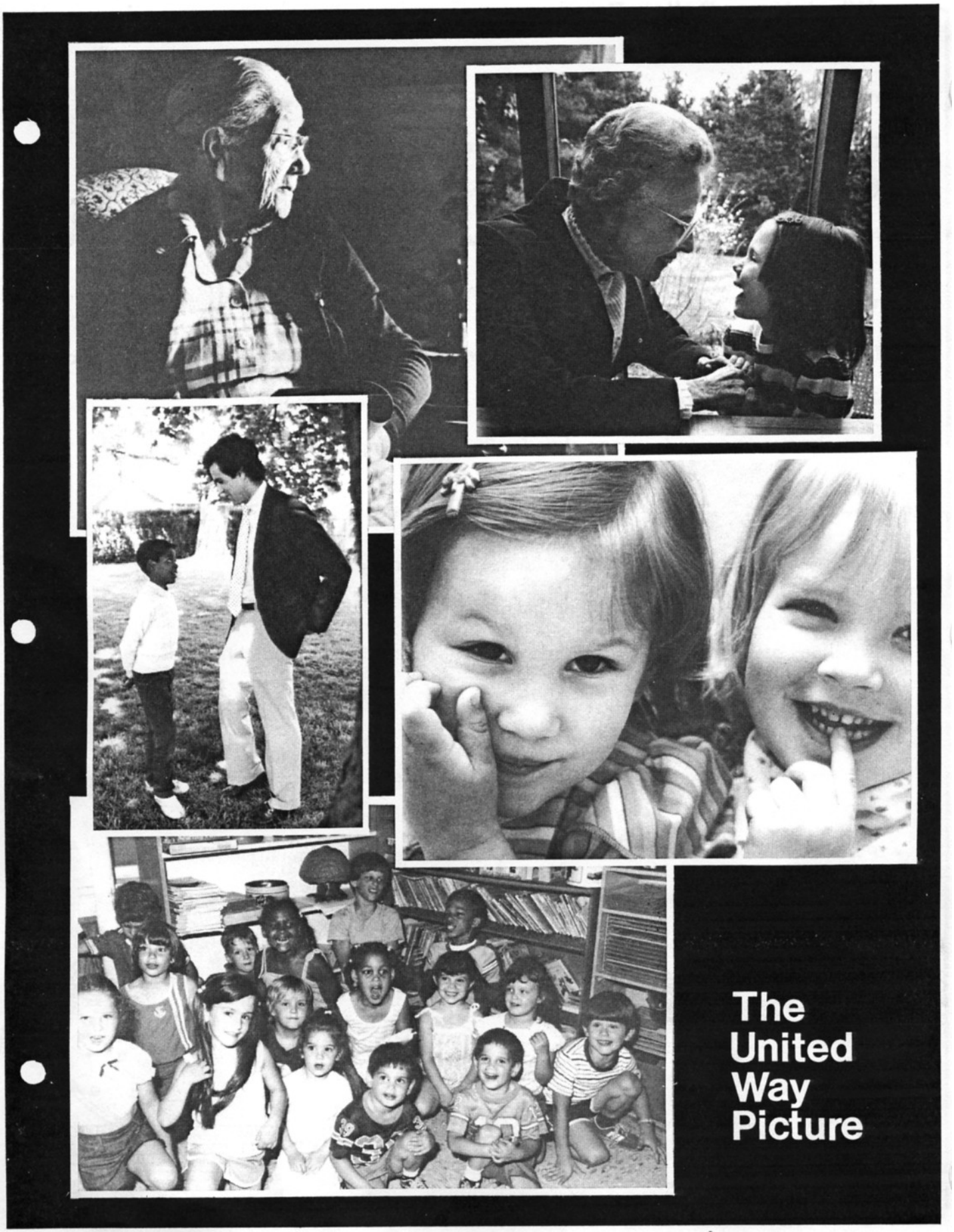
- Three weeks of residence and support to a recovering alcoholic woman at a halfway house
- A year of telephone reassurance service for two homebound people
- Participation in a sign language class for 20 hearing impaired adults

$20 a week buys:

- A place in a five week self-reliance course for one child
- A one-hour parenting class for a pregnant girl
- A full day of day camp for a retarded or developmentally disabled child

$30 a week buys:

- The literature (books and forms) needed for the leader in a new Cub Scout Pack or Boy Scout Troop
- Psychiatric evaluation or one hour of counseling for several unmarried mothers
- Counseling for two newly divorced families


The
United
Way
Picture

PPPL HOTLINE
PRINCETON PLASMA PHYSICS LABORATORY

Vol. 8, No. 3 November 17, 1986

ORC SURVEY RESULTS REPORTED

Results of the Opinion Research Corporation (ORC) survey of PPPL employees were summarized Monday, November 10, in a presentation to PPPL supervisors by ORC's John Lingle, Research Executive. Findings of the survey were also made available in a report booklet, which has been distributed to all PPPL staff. Anyone who has not yet received a copy of the report should call Bill Johnson, ext. 2052.

In his comments to supervisors following Monday's ORC presentation, Dr. Furth expressed his appreciation to all staff members for taking the time to complete the survey. Eighty percent of the staff responded. He also stressed the importance that PPPL management places on the results of this survey which clearly highlighted some strengths, such as employee commitment to the Laboratory's mission, as well as some internal issues, such as communications, which need increasing attention.

Dr. Furth has established a follow-up Task Force, composed of members of the Laboratory's General Council, who will analyze the survey findings in detail and recommend to him specific actions to respond to the findings. Members of the Task Force are:

J. Clark, Chairman
J. Sinnis
D. Mullaney
C. Staloff
R. Gould
W. Mizutowicz
S. Bernabei
R. White
S. Iverson and W. Johnson, Staff Support

The Laboratory as a whole has spoken through the survey; it is now up to management to respond. The members of the Task Force, who are Laboratory managers, will help the Director and the Council respond to Laboratory-wide concerns and issues identified in the survey.

The Director in his talk and in his memorandum to staff encouraged everyone in the Laboratory to offer ideas which will enhance the quality of life at PPPL to him and to the members of the Task Force. For the next month, Jim Clark will be available between 11:00 a.m. - 12:00 noon each weekday to talk to staff members who wish to comment on the survey results. Please drop in or call Letty Wohar, ext. 3040, to make an appointment.

Early next year the Director will report to Laboratory staff on the actions related to the survey results which he has planned or has set in motion.

FY87 APPROPRIATION

The FY 1987 appropriation for magnetic fusion development, as finally enacted by the Congress, contains a $12.5 million dollar increase over the $333 million proposed by the President last January. This is good news for PPPL and for the whole fusion community. President Reagan's interest in an international fusion-research initiative and the scientific results produced by PPPL this summer probably had a favorable effect on the outcome.

The precise amounts within the total fusion appropriation that will be allocated to the Laboratory for FY 1987 are not yet known, but PPPL has been encouraged to plan for a slightly higher level than in FY 1986.

Although the FY 1987 appropriation has now been enacted, some budget uncertainties remain. The Administration and the new Congress, which convenes in January, must still grapple with the Federal deficit problem. The Gramm-Rudman-Hollings Act remains on the statute books, although somewhat altered by the Supreme Court decision.

So far, however, things have gone well this year in Washington.

United Way CAMPAIGN UPDATE

Volunteers for the Princeton Plasma Physics Laboratory's United Way fund drive were selected from all Laboratory areas. Each volunteer distributed pledge cards in their various PPPL "neighborhoods." Pledge cards should be returned to the United Way volunteer as soon as possible.

If the early results of this year's United Way campaign are any indication, Laboratory employees are extending a helping hand. In the first days of the fund-raising drive, PPPL achieved an 8.7% participation rate. However, if contributions continue to come in at this pace, the Laboratory's 50% participation goal will not be met when the campaign ends.

Although we are off to a good start, everyone's help is needed if we are to reach our goal. Be sure and return your pledge card in the self-addressed envelope provided. If you have misplaced your pledge card, you can get another from Rosemary Fuccello, ext. 2041, in Personnel.

TRANSITIONS

The HOTLINE offers its congratulations to the following employees, who recently became proud parents:

Stefan Weicberger formerly of the Power Engineering Branch and his wife, Sasha, whose son was born September 7;

Daniel Heifetz of the Applied Physics Division and his wife, Suzanne, whose son, Robert Adam, was born on September 10;

Wanda Mizutowicz of Accounting and her husband, Ted, whose daughter, Jennifer Danielle, was born October 5.

NEW *HOTLINE* EDITOR

Carol A. Phillips has been named acting editor of the PPL HOTLINE starting with this issue. She replaces Kathy Dunn who left the Information and Administrative Services Branch to take a position in the Controller's Office.

Items of general interest to PPPL employees should be sent to Carol at Module 2, C-Site.

The PPL HOTLINE is issued by the Princeton University Plasma Physics Laboratory, a research facility supported by the United States Department of Energy. Correspondence should be directed to PPL Information Services, Module 2, C-Site, James Forrestal Campus, ext. 2754.

NEW LOCATION

Graphic services has moved to the third floor of the Laboratory Office Building, effective the week of November 17.

All work requests should be directed through Bernie Giehl in Room 348, ext. 3370.

HOTLINE
PRINCETON PLASMA PHYSICS LABORATORY
Vol. 8, No. 4 November 24, 1986

NEW ION SOURCES INSTALLED ON TFTR BEAMS

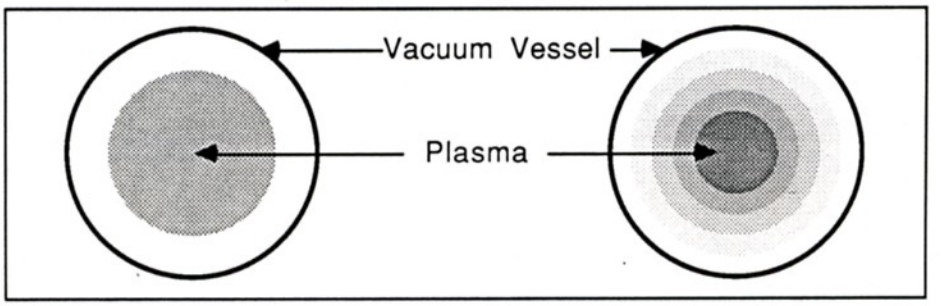
TFTR operations have been suspended until January 5th for the installation of three new ion sources on each of the four neutral-beam lines. These sources will help TFTR reach its ultimate goal of providing the first direct experimental data on a new plasma regime in which substantial plasma heating is provided by the helium nuclei (alpha particles) produced in fusion reactions.

To achieve this self-heating regime, a number of improvements in TFTR performance are necessary. A more strongly peaked plasma-density profile--that is, a much higher density in the center of the plasma than at its edge--is needed, along with the means to heat the critical central area for longer periods.

The new ion sources, will provide greater total power--25 MW--for longer duration--up to 2 seconds. But more importantly, they will provide the beams in a form that will penetrate and heat the plasma's high-density central area.

Developed at the Lawrence Berkeley Laboratory as part of a national research effort, the new ion sources were manufactured by the RCA Tube Operations Division in Lancaster, Pennsylvania. Similar sources will be installed on the "BIG D" tokamak at GA Technologies Inc. in San Diego.

The ion source consists of a plasma generator and an accelerator. To form a beam, an arc discharge is run through deuterium gas, creating a plasma. The ions then enter the accelerator portion of the source where they are "pushed" across a voltage gradient from 120 kV to 100 kV to -3 kV to ground. As they are pushed from high voltage to ground the particles gain energy. The voltages of the grids and the spacing between them act as a lens to focus the beam.



The above schematic shows a cross section of a plasma of uniform density (left) and one with a highly peaked density profile (right).

The accelerated ions leave the source and enter the gas cell neutralizer of the neutral-beam line where about half of the high-energy ions are neutralized via charge-exchange. The remaining ions are deflected from the beam path, leaving only the neutral fraction aimed at the tokamak plasma. As neutral atoms, they can penetrate the confining magnetic fields, enter the plasma, and by colliding with the plasma particles, transfer their energy to the bulk plasma thereby heating it.

The new ion sources called magnetic cusp bucket sources, achieve their penetrating power by improving the mix of atomic-to-molecular deuterium that forms the neutral beam. When deuterium gas is ionized, some of the deuterium forms clusters of two or three atoms, rather like lumps in gravy. When accelerated, a uniform amount of energy--up to 120 keV--is imparted to each particle. Clustered atoms must share this 120 keV, so that when they break up after acceleration, each atom retains only 60 keV or 40 keV, depending on whether there were two or three atoms in the cluster. Unclustered atoms receive the entire 120 keV, and at this

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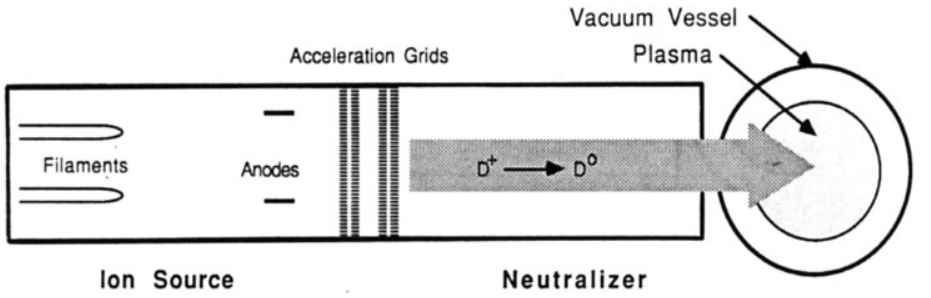
greater energy penetrate more readily to the plasma center.

The former ion sources provided up to 20 MW of power with about 50% at full energy, 30% at half energy, and 20% at one-third energy. The sources were developed for 0.5-second pulses and at the end of October were pushed to 1.0 second.

The new sources will provide a total of 25 MW with about 75% of the power in the full-energy component (up to 120 keV), 15% at half energy, and 10% at one-third energy. This will allow a great improvement in TFTR central heating performance. Although the new sources were originally developed for a 30-second pulse length, the beams on TFTR will be limited to a maximum pulse length of two seconds to allow operation with the existing power supplies and beam line components.

Physicists, engineers, and technicians from the TFTR Project and the Engineering Department are working to install the new ion sources. Presently, they are assembling and installing the sources in magnetically shielded enclosures and modifying power supplies and beam lines to accept them. The sources will then be mounted and tested for the next round of TFTR experiments early in January.

by Diane Carroll



A schematic diagram of a TFTR neutral-beam line.

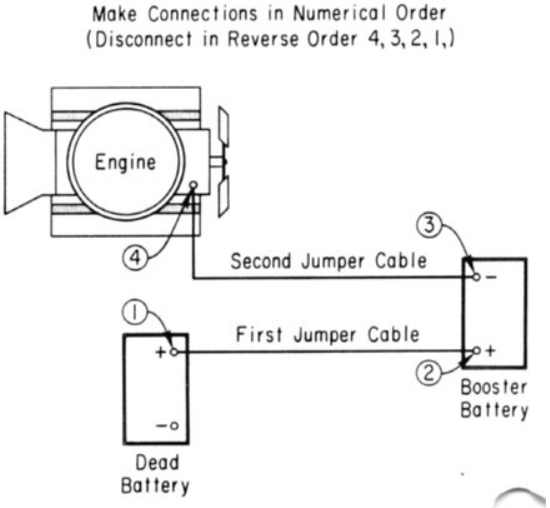
BATTERY CHARGING

As temperatures regularly dip below freezing this winter, many car batteries will "die" from the strain of cold weather starting. You can avoid sharing your battery's fate by observing the following rules for jump starting a car:

- Use only a 12-volt jumper system. You can damage a 12-volt starting motor, ignition system, and other electrical parts beyond repair by connecting them to a 24-volt power supply.
- To avoid damage to the vehicle's electrical system, DO NOT disconnect the battery of the vehicle to be started.
- Make sure neither vehicle involved in the jump start touches the other and that both parking brakes are fully set.
- Turn on the heater fan motor of the vehicle to be started. In cars with automatic climate control, set the function control to "defrost." All other switches and lights on both vehicles should be turned off.
- Follow the correct sequence when hooking up jumper cables (see diagram). Be sure to attach the end of the second jumper cable to an engine bolthead or other metallic contact point. If you connect the negative terminals on both batteries, a spark could occur and explode the gases normally present around the batteries.
- Make sure the jumper cables are not obstructing moving engine parts before starting either vehicle.

If you have any doubt about jump starting your car on campus, call Transportation Services at ext. 3109 during normal working hours. For questions when you're at home or on a trip, contact a good road service.

The best way of avoiding battery failure is to check your battery's condition frequently during winter driving months. Make sure battery cables are



Correct sequence for hooking up jumper cables.

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tightly fastened to the terminals. If corrosion has occurred, remove the cables and clean both the cables and terminals with a wire brush.

Another indicator of battery health is the electrolyte level. Each cell should be filled to the level indicator, but not overfilled. If the level has dropped, refill the cell with distilled water. Tap water can be used if it has a low mineral or alkali content (if it isn't hard water). If your battery needs water often, have the charging system checked.

And while you're keeping an eye on your battery, remember to protect your eyes and skin. Batteries contain sulfuric acid, and splashing of the acid can cause burns. In case of acid contact, flush the affected area with water for a minimum of 15 minutes.

ATTENTION WALKERS AND JOGGERS

Do you like to jog or walk to the Laboratory? Do you walk or run on your lunch hour? Are you interested in developing new walking and jogging trails around the Laboratory?

If any of the above applies to you, you will be happy to learn that possibilities to provide access from the Laboratory to the recently built paths that serve the College Road and Moran Woods areas have become available. But, before any decisions are made, your ideas and suggestions are wanted. Please send them to Bob Smart, Rm B332, C-Site.

Depending on the input, a meeting may be called to discuss the suggestions. If you would like to be invited, let Bob know.

BRIDGE TO BECOME REALITY

A bridge over the Delaware and Raritan (D&R) Canal at the Millstone Aqueduct may finally become a reality after nearly eight years. "Maybe this winter" is the word Bob Smart received when he checked last month with the Canal Commission on the status of the bridge.

Despite the availability of funding, it has taken this long to gain the necessary approvals from the many public agencies involved in such a project.

The PPPL staff was instrumental in gaining support and approval for this crossing. It is hoped that in the near future many will be able to use the bridge while bicycling, jogging, or walking to the Laboratory from the Princeton area.

MIZUTOWICZ TO HEAD ACCOUNTING AND FINANCIAL CONTROL DIVISION

Wanda Mizutowicz

Wanda Mizutowicz has been promoted to head the Laboratory's Accounting and Financial Control Division. She succeeds John Murphy, who retired November 5.

Ms. Mizutowicz came to the PPPL Accounting Office in 1977 as a subcontract accountant. She was promoted to Assistant Budget Officer for Program Management in 1981. In 1984, she was transferred back to the Accounting Division as Manager of the Quality and Cost Control Branch. Prior to this promotion, she also served as Manager of Accounting Operations.

As Division Head, Ms. Mizutowicz will provide leadership, planning, and organizational direction for the general management of the Accounting and Financial Controls Division. She will monitor and support the various projects of the Division and will be responsible for both the strategic and day-to-day management.

Ms. Mizutowicz is a Certified Public Accountant, and holds a bachelor's degree in accounting from Trenton State College.

NEW INVESTIGATOR HIRED

The Department of Public Safety, Forrestal Division, recently welcomed a new staff member when James S. Lanzi was appointed to the Investigator Section. Lanzi will work with investigator Lori Trani-Gettelfinger in crime prevention, campus investigations, and other security and emergency matters.

A 1986 graduate of the Burlington County's 49th Municipal Police Training Course, Jim has attended both Bucks and Mercer County Community Colleges where he took courses on criminal justice,

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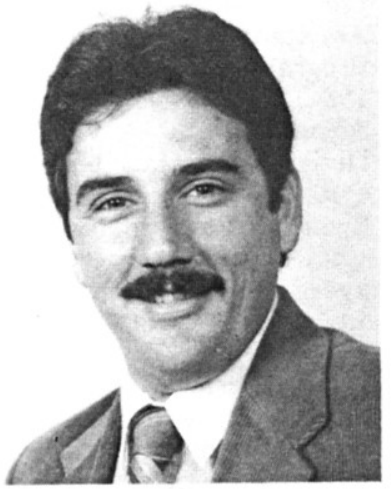
crime prevention, and fire science.



James S. Lanzi

In addition, Jim has specialized training in firefighting from the Pennsylvania and New Jersey State Fire Schools and the University of Maryland's fire school. He is trained in light and heavy rescue techniques, is a certified Emergency Medical Technician, and is the former fire chief for the Falls Township Fire Company.

Lanzi, who has been a member of Princeton University's Public Safety Department's Main Campus Division since 1980, has held positions as Security Officer, Emergency Services Officer, and Proctor. He replaces Douglas Watson who accepted a supervisory position on main campus.

ANS MEMBERSHIP

The North Jersey Section of the American Nuclear Society is presently accepting applications for membership. Interested individuals should contact Charles Gentile, ext. 2139, for further information and application material.

RETIREES HONORED

Twenty PPPL employees, representing over 250 years of service to the Laboratory, were recently honored with a retirement dinner at the Forsgate Country Club.

The retirees include:

Robert Bergman
Robert Connolly
Ernst deHaas
Mary Alice Eubank
William Hooke
Constance Hopkins
Nan Jones
Chester Kucemba
James Lee
Helen Livernoche
Robert Middlebrook
John Murphy
Aron Nudelman
Ralph Pope
Ramon Pressburger
William Rutkowski
Sylvia Schiff
Peter Smith
Al Swain
Howard Zuvers

The Laboratory and their friends congratulate them upon their retirement.

THANK YOU

The HOTLINE received the following thank-you note from former Laboratory employee William Rutkowski:

"My sincere appreciation and gratitude to everyone who made my retirement luncheon and past ten years at PPPL so successful.

Also, thank you for all the lovely messages and best wishes sent by those who could not attend."

FOR SALE

FOR SALE: 1983 Buick Skylark; V6, air conditioning, tinted glass, sun roof, am/fm radio. High mileage. Great shape, garage kept, one owner. Must see. $2995. Call Donald Greene, ext. 3717.

FOR SALE: "Holiday Fun" Lowery Magic-Genie Organ with bench, headset, and books. Excellent condition. Paid $2,000; sell for $700. Call 799-8743.

FOR SALE: Dark maple, colonial-style magnavox stereo. AM/FM radio, phonograph, and 8-track tape. Excellent condition. $50.00. Call 799-8743.

FOR SALE: Blonde TV stand on pedestal. 23" opening. $10.00. Call 799-8743.

CRAFT AND HOBBY SHOW AND SALE

A hobby and craft show/sale, sponsored by the Princeton University League, will take place March 28, 1987 at the League's headquarters, 171 Broadmead, Princeton, NJ.

This event is being offered as a service to the University Community. There is no charge for table space and the League does not take a commission.

Any League members interested in participating can obtain a registration form and additional information by contacting the League office at 452-3650 or Margaret Bol at 466-0809.

If you are not a League member and would like to participate, a membership application can be obtained by calling the League office.

EMERGENCY CLOSINGS

On those occasions when the Laboratory will be closed for the day or normal starting schedules will be delayed (late opening), special announcements will be made over the following radio stations:

Princeton	WHWH	1350 kHz
Trenton	WTTM	920 kHz
Trenton	WPST (fm)	97.5 MHz
Levittown	WBCB	1490 kHz
New Brunswick	WCTC	1450 kHz

Please remember: When Princeton University is mentioned, the announcement also includes the Plasma Physics Laboratory.

The University begins monitoring weather conditions as early as 4 a.m., and arrives at the decision to open, close, or have a delayed opening as early as practical. PPPL **does not** independently arrive at its own decision to open or close.

The Laboratory has arranged with the Princeton Answering Service to provide an emergency telephone number to call to determine whether PPPL will be closed. When calling the answering service at 609-924-1760, individuals should identify themselves as Princeton Plasma Physics Laboratory employees. Please call this number **only** if you are unable to receive radio broadcast announcements and **only** to learn if the Laboratory will be opened or closed. No other information will be given by the answering service.

In the event that PPPL remains open, employees who find it impossible to report to work because of hazardous conditions should notify their supervisors **as soon as possible** that they are unable to report to work.

LABORATORY TO CLOSE FOR HOLIDAY SEASON

The Princeton Plasma Physics Laboratory will again be closed for the Christmas/New Year's holiday season -- 24 December 1986 thru 2 January 1987. The dates for the Laboratory closing are:

Day	Date	Type of Leave
Wednesday	December 24	University Holiday
Thursday	December 25	University Holiday
Friday	December 26	University Holiday
Monday	December 29	Laboratory Closing
Tuesday	December 30	Laboratory Closing
Wednesday	December 31	Laboratory Closing
Thursday	January 1	University Holiday
Friday	January 2	University Holiday

Three Christmas holidays instead of the customary two have been authorized by Princeton University. Therefore, only one optional holiday will remain for FY87. Laboratory staff members have the option of charging three days (December 29, 30, and 31) as vacation or two days as vacation and one day as an optional holiday. Employees are encouraged to use the optional holiday during the Laboratory closing.

Staff members who anticipate problems are urged to talk with their supervisors or to contact the Personnel Office as soon as possible.

Paychecks for the Exempt Staff will be available on Friday, December 19; the Bi-Weekly Staff paychecks will be available on Tuesday, December 23.

SAFETY TRAINING COURSES

The Occupational Medicine and Safety Office has scheduled the following training courses for December:

Course	Date and Time
Back Injury Preventions	December 10 8:30 a.m. - 12:00 noon
Lockout/Tagout Procedures	December 11 1:30 - 3:00 p.m.
Proper Use of Fire Extinguishers	December 17 1:30 - 3:00 p.m.

Employees must obtain permission from their immediate supervisor to attend these classes. Supervisors must call Mary Ann McBride at extension 3468 to enroll their employees. Attendees will be notified where their class will meet one week before the scheduled session.

 Tour Guides 

July, August, and September certainly did not constitute a "vacation" season for the PPPL tour program. Over 750 visitors toured PPPL. July led the period with 19 tours and 538 sightseers. We'd like to thank the tour guides who led our visitors through the Laboratory.

JULY

Halsey Allen, III
Dale Ashcroft
Lee Benson
William Blanchard
Fred Dylla
Hsi Feng
Daniel Huttar
Robert Fleming
George Gammel
Henry Greenside
Don Grove
Aleksandar Ilic
Ralph Izzo
James Kamperschroer
Paul LaMarche, Jr.
George Martin
Milton Machalek
Ernst Nieschmidt
David O'Neill
Robert Philbin
Joseph Stencel
Marilee Thompson
David Ward
Irving Zatz

AUGUST

James Faunce
Hsi Feng
Paul Funk
Charles Gentile
Robert Kaita
George Levitsky
Ernst Nieschmidt
Ned Sauthoff
Shoichi Yoshikawa
Michael Zarnstorff

SEPTEMBER

William Blanchard
Alfred Cavallo
James Faunce
Hsi Feng
Paul Funk
Ed Lawson
Thomas Murphy
Alan Ramsey
Ned Sauthoff
Stanley Schweitzer

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HOTLINE
PRINCETON PLASMA PHYSICS LABORATORY
Vol. 8, No. 5 December 19, 1986

LABORATORY CONSOLIDATION BEGINS

Tony DeMeo and Pat Stephens in their new offices. The Information and Administrative Services Branch was one of the first groups relocated for Laboratory consolidation.

Jack Joyce has been named chairman of an Oversight Committee that will orchestrate PPPL efforts to relocate all Laboratory personnel and equipment currently at A and B Sites. According to an agreement between the Department of Energy and Princeton University, this must be completed by September 30, 1987.

To meet this goal, a relocation plan composed of three parts has been proposed:

- Construction of a new high-bay shop building at C-Site to house the large shops and heavy machinery presently at A and B Sites.
- Consolidation of some personnel located at A and B Sites to C and D Sites; Leasing of off-site commercial property for employees and small laboratories, for which there is no space immediately available at C and D Sites.
- Construction of a new Engineering Office Building at C-Site to house all Laboratory personnel that must be relocated off-site.

Jack emphasized that "each of these elements is very ambitious. The feasibility of key milestones depends on close cooperation, timely approvals and, in some cases, funding from DOE." Although difficult to accomplish, consolidation of the Laboratory to C and D Sites is "viewed as an opportunity to bring together the various PPPL groups and activities at one place and thereby increase the efficiency of the Laboratory."

There are approximately 340 permanent employees at A and B Sites. Roughly half of these will be moved to C and D Sites and half to offices off-site. In order to accommodate these additional employees, consolidation of C- and D-Site facilities and personnel has started.

Some space already exists and additional space is being created with minor relocations and simple modifications to existing areas. For example, the Information and Administrative Services Branch is currently being relocated to the third floor of the LOB. Modifications and renovations will then be made to the Modules once they are empty, greatly improving the usefulness of the space.

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Consolidation at C and D Sites will require a greater population density. PPPL is using the general government guidelines of 180 sq ft gross or 135 sq ft net per person. Gross square feet include such things as hallways, stairwells, bathrooms--the outside dimensions of a building divided by the number of people in the building. Net square feet are the dimensions of a room divided by the number of people in the room.

One major group that will not be affected greatly during consolidation is the research group. "Research activities must keep moving forward during this period of consolidation," Jack emphasized. "Besides, all research devices and their support personnel are already located at C and D Sites." Some minor disruptions may still occur though, for example, if the Material Test Lab is being relocated and materials need testing. An option will be to have the testing done by an outside facility.

Planning and moving for the consolidation are being handled primarily by PPPL personnel. No additional funding has been provided to the Laboratory by DOE, except for construction of the new high-bay shop at C-Site. Since PPPL must stay within its FY87 budget, Laboratory management has identified funds and resources in the present budget that can be set aside for consolidation efforts. Overtime will be utilized when necessary and day-to-day maintenance will be reviewed carefully as to its absolute necessity. Since no major design and fabrication activities are scheduled at PPPL in FY87, some resources are available. Subcontracts will be sought or temporary personnel will be hired if needed to maintain schedule requirements.

Many day-to-day services such as the availability of adequate parking space, cafeteria services, and shuttle arrangements are being reviewed to make sure they will meet the new requirements caused by consolidation.

Boxes and furniture being moved from one place to another has become a familiar sight at PPPL. Left to right: Patricia Stephens, Larry Jones, and Dominick DeLuca.

According to Jack, "the general feeling is there will be enough parking space." The parking lots are presently underutilized and there are still areas that can be used for parking if necessary. Additionally, when plans for the new building are made, new parking areas will be included.

While there are no immediate plans to enlarge the cafeteria to meet the expected increase in the number of people it serves, ideas such as a more formal scheduling of lunch periods with, perhaps, the cafeteria remaining open longer are currently under review.

Finally, decisions on shuttle service depend on future considerations, such as where the off-site offices will be located. "But," Jack noted, "PPPL, DOE, and Princeton University are cooperating in every way possible to anticipate and provide whatever is needed during the consolidation period and beyond."

"It is interesting to note," Jack said, "that nearly thirty-five years after the beginning of fusion research at Princeton, the Laboratory is finally consolidating to one area. This has always been a goal of PPPL, Princeton University, and DOE. When C-Site was built in the fifties, all research machines and personnel were to be relocated there. For some reason this never occurred. Then, with the abolishment of the Princeton-Penn Accelerator and the construction of TFTR, it was just not practical to move everyone. Now, nearly thirty-five years later, here we are fulfilling our original plans."

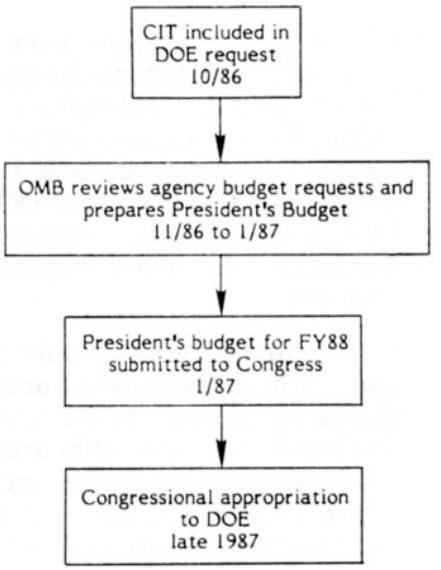
United Way

The United Way needs your help. Although the Laboratory has already exceeded last year's 32% participation record, another 100 donations are needed to meet this year's goal of 50%.

Give yourself an early holiday present. Make a donation to the United Way. What better way to express your concern for those less fortunate? People helping people -- a gift to yourself as well as others.

CIT Funding Approvals Sought; Environmental Assessment Undertaken

The Department of Energy has included the Compact Ignition Tokamak (CIT) as a separate construction item in its budget request for fiscal year 1988. The Plant and Capital Equipment (PACE) cost is estimated to be $300 million, which would be appropriated over five years. Project completion is slated for 1993. The DOE request is now being reviewed by the Office of Management and Budget (OMB). If approved by the Administration, the CIT authorization and initial funding will become part of the President's fiscal year 1988 budget that will go to Congress in January. Congressional action on the budget will come in the latter part of 1987. All designs and plans have been made under the assumption that, if funded, CIT would be located at Princeton.



CIT Funding Process

A conceptual design report and a research and development plan were submitted to DOE in June of this year by the CIT National Design Team headed by PPPL. The DOE Office of Fusion Energy has reviewed this plan and validated the cost estimates included in the report.

Environmental Assessment Underway

To meet the requirements of the National Environmental Policy Act (NEPA), the Idaho National Engineering Laboratory (INEL) was selected in October by the CIT national team to perform an environmental assessment of the Project. Environmental studies were begun this autumn and will continue through 1987.

As part of the environmental assessment, INEL is evaluating the physical environment of the proposed site including its geography, geology, hydrology, seismology, meteorology, and plant and animal life. It is also studying the demographics, socioeconomic factors, land use patterns, and cultural resources of the area. Since the CIT is designed as an addition to the TFTR facilities, these studies will extend the environmental review done for TFTR.

INEL will address all effects of CIT operation, including thermal discharge and liquid and solid wastes. PPPL's Project and Operational Safety Office under Joe Stencel is working with INEL to collect and review environmental data and information from TFTR tritium monitoring to assess any radiological effects of CIT operation. INEL will also evaluate the effects of accidents and abnormal operating conditions and will address facility decommissioning and decontamination.

In April, a draft Environmental Assessment will be prepared and reviewed, and a final report completed in July 1987.

The CIT Team

More than any fusion project to date, CIT is a national effort. The Ignition Technical Oversight Committee (ITOC), chaired by Harold Furth, oversees all aspects of CIT planning. A design physics group headed by Ron Parker of the Massachusetts Institute of Technology, with representatives from most of the U.S. fusion laboratories and universities, is responsible for establishing physics goals and parameters. PPPL leads the CIT National Design Team, which is responsible for machine design and construction. The management of this effort is headed by John Schmidt of PPPL, Project Manager; D.B. Montgomery of MIT is Project Engineer; C.W. Bushnell of PPPL, F.A. Puhn of GA Technologies, Inc. and T.E. Shannon of the Oak Ridge National Laboratory, are Engineering Managers.

A Work Breakdown Structure (WBS) was established for CIT. Under this system, each major element of the CIT and each of its major components are identified. Each WBS element has been assigned to one of the U.S. fusion laboratories, and a WBS manager appointed. The assigned laboratory is responsible for all aspects of that element from design through fabrication, installation, and testing until first plasma.

Fusion Laboratory Responsibility for CIT Elements

CIT Element	Responsible Laboratory
Divertor	GAT
First Wall	GAT
Vacuum Vessel	GAT
Shielding	ORNL
Toroidal Field Magnets & Structure	PPPL
Poloidal Field Magnets	MIT
External Tokamak Structure	ORNL
Internal Remote Maintenance	GAT
Diagnostics	PPPL
External Vessel Remote Maintenance	ORNL
Ion Cyclotron Resonance Heating	ORNL
Electrical Power	PPPL
Instrumentation and Control	LLNL/PPPL
Water Cooling	PPPL
Cryogenics	PPPL
Fueling	LANL
Vacuum Pumping	ORNL
Conventional Facilities	INEL
Cleaning, Disposal, and Monitoring	LANL

GAT = GA Technologies, Inc.
ORNL = Oak Ridge National Laboratory
MIT = Massachusetts Institute of Technology
LLNL = Lawrence Livermore National Laboratory
LANL = Los Alamos National Laboratory
INEL = Idaho National Engineering Laboratory

PPPL is responsible for the CIT toroidal field magnets and machine structure under John Citrolo, diagnostics under Ken Young, and electrical power under Dan Huttar. Bob Fleming has either direct responsibility or coordinating responsibility for fueling, vacuum pumping, cryogenics, water cooling, and cleaning, disposal, and monitoring of radioactive materials, as well as the responsibility for interfacing safety with all the subsystem designs.

Management of the large research and development effort to support CIT is also centered at Princeton under Charlie Bushnell. Systems engineering, the difficult task of coordinating the design of all CIT elements, is the responsibility of George Sheffield. Milt Machalek is responsible for project control and administration, including documentation and procurement. Sallie Young and Natalia Bayes are secretaries for the CIT Project.

While awaiting decisions on project funding, the CIT effort is concentrating on optimizing the conceptual design, refining physics studies, environmental reviews, and management planning.

Diane Carroll

Solvent Disposal Procedures

Staff members should not dump solvents in the waste disposal tanks. Chemicals should never be mixed -- it can be dangerous. It can also increase disposal costs to the Laboratory by as much as $40,000 per year.

There are two ways to dump solvents: A separate solvent collection area can be established or arrangements for disposal can be made through Scott Larson of the Hazards for Disposal Section, ext. 3387. Waste disposal tank locks are also available.

Remember that all chemicals must be disposed of properly. If you have any doubts, call the Hazards for Disposal Section for help.

Environmental Protection

Concern for the environment is an important consideration for any project undertaken at PPPL. Environmental impacts must be minimized, and the Laboratory, in line with DOE policy, is putting increased emphasis on environmental matters.

Chemical materials should be used only in designated areas following proper procedures. They should be stored in areas which are not prone to accidental release, especially by unsuspecting individuals.

The work area should be surveyed to ensure there are no unforeseen hazards.

If there is a spill, it should be reported immediately by calling ext. 3333. The Emergency

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Services Unit's HAZMAT Team will be able to respond quickly to minimize the effects and the area of contamination.

Terpstra Speaks to SOSSO

"Women Getting into Politics" was the topic of a seminar presented to the Secretarial and Office Support Staff Organization (SOSSO) by Jane Terpstra, a Princeton attorney and former member of Princeton Borough Council.

Ms. Joan Terpstra (left), a local Princeton attorney, and MaryAnn Brown (right), Vice-President of the SOSSO.

"Politics does not necessarily mean running for an elective office," Ms. Terpstra told the audience. "It also means being involved in your local community."

According to Ms. Terpstra, there are many ways to become involved: Attending local community meetings, serving on volunteer committees, such as for a library, and joining a local political organization. All provide excellent ways to lay the groundwork necessary for the woman who eventually hopes to be elected to public office.

Ms. Terpstra contends that women have much to contribute to their communities. Many women, because of their day-to-day activities, are particularly well informed and understand and care about changes that might affect them and their families. "Women bring a very special perspective to politics, and they are beginning to be taken seriously in this role. They must not wait for other people to do what is right for them or their community," she said.

The seminar is one of a series of professional seminars sponsored by the SOSSO throughout the year. Everyone on the secretarial or office support staff is eligible to attend with supervisor's approval. For more information on future seminars or to suggest a topic and/or a speaker, call Dolores Bergmann at ext. 2200.

Drug Testing Not for PPPL

PPPL employees have asked periodically if the Laboratory engages in or is about to engage in routine drug screening of its staff. This uncertainty has been accentuated recently by President Reagan's statements regarding federal employee drug testing programs and the Laboratory's program of health evaluation of employees, which includes routine blood tests.

It is not presently PPPL policy to conduct drug screening of its employees, nor is such a policy contemplated in the foreseeable future.

Rafting Trip Planned

Richard Henne has made reservations for 15-16 March 1987 to raft the Cheat and Tygart Rivers located in West Virginia. The cost for rafting both rivers is $78 plus 5% sales tax or $39 plus 5% sales tax per river. If you would like to join him, a nonrefundable $10 deposited must be sent to him by 10 January 1987. His office address is 213 Guyot Hall, Main Campus.

The outfitter for the rafting trips is Appalachian Wildwaters located in Albright, WV. Wet suits are required and may be reserved if needed. Additional information may be obtained by calling Richard at ext. 5706.

Laboratory Offers Science Program for High School Students

"Science on Saturday," a series of eight seminars for high school students, will again be presented at PPPL on Saturday mornings, beginning in January. Topics will be drawn from current research in molecular biology, lasers, astrophysics, supercomputers, particle physics, and, of course, fusion. PPPL scientists, University faculty, and scientists from area industries will present the lectures, tours, and demonstrations. Certificates will be awarded to students completing the series.

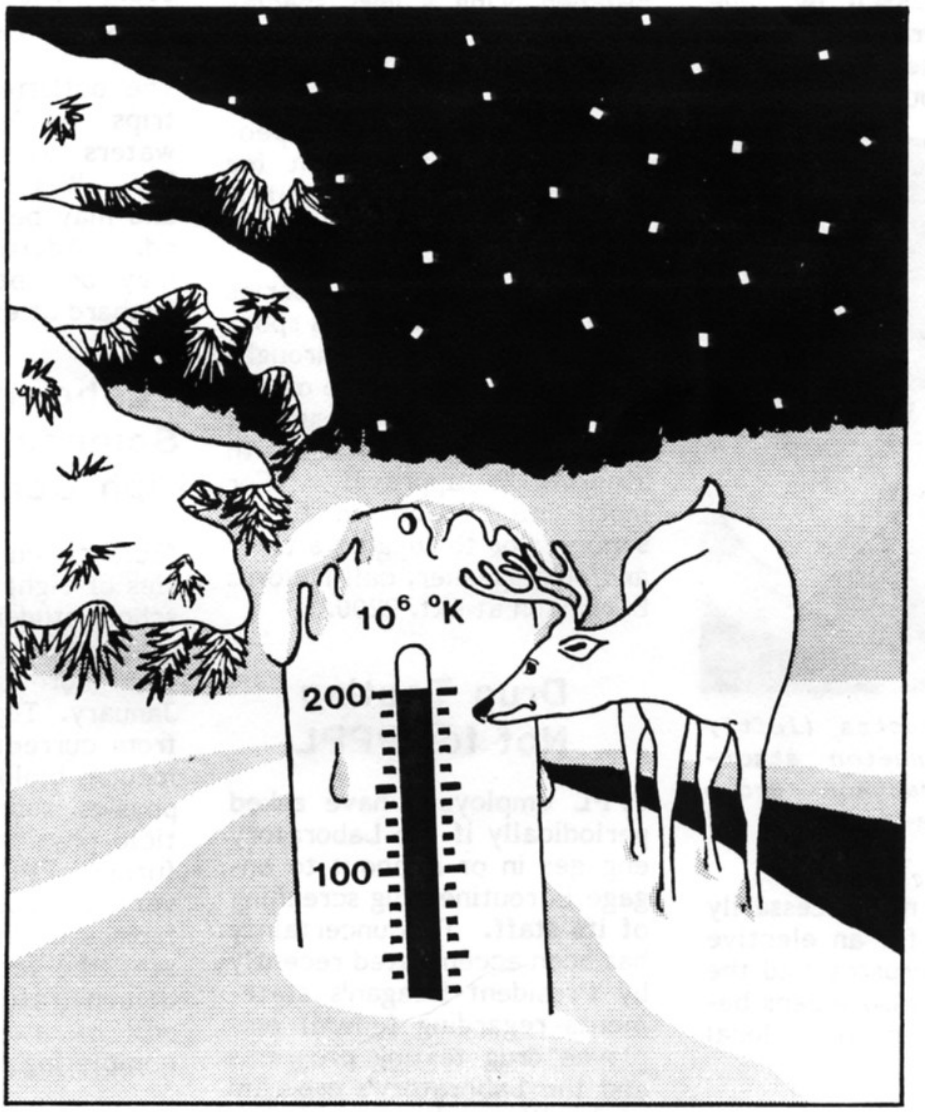
The seminars are open to high school students, teachers, and parents free of charge. Those interested can register at the first session, which will be held in the M.B. Gottlieb auditorium on Saturday, January 17th at 9:00 a.m. For more

(continued)

information call D. Carroll, ext. 2751, Mondays, Wednesdays, and Fridays, 8:00 a.m. to 1:00 p.m.

"Science on Saturday" has been offered twice before and was enthusiastically received by all participants. Last year, over 150 students were enrolled.

The PPL HOTLINE is issued by the Princeton University Plasma Physics Laboratory, a research facility supported by the United States Department of Energy. Correspondence should be directed to PPL Information Services, Module 2, C-Site, James Forrestal Campus, ext. 2754.



Best wishes for 1987--and congratulations on 1986. Have a very restful and cheerful holiday!

HOTLINE
PRINCETON PLASMA PHYSICS LABORATORY
Vol. 8, No. 6 December 22, 1986

ORC SURVEY STATUS BULLETIN

The status of work in response to the employee survey conducted by the Opinion Research Corporation (ORC) earlier this year is summarized below.

Last month, the Director established a Follow-Up Task Force, composed of members of the General Council, to analyze the survey findings and to recommend actions to respond to these findings. In the intervening month the Task Force has reviewed the ORC findings in detail, met with the Director to obtain his guidance, and organized itself into five working panels to address concerns in specific areas, as follows:

- Job Training and Career Development: C. Staloff, R. White, W. Johnson.
- Managerial and Operational Effectiveness: J. Sinnis, R. Gould, D. Mullaney.
- Pay, Promotion, Benefits, Job Posting: S. Iverson, W. Mizutowicz, C. Staloff.
- Working Conditions and Equipment: D. Mullaney, R. Gould, R. White.
- Communications: J. Clark, S. Bernabei, W. Johnson

The first named on each panel acts as chairperson.

Preliminary reports of these Panels have been developed and are now being discussed in the full Task Force. Task Force members also have received valuable input from many PPPL employees through informal meetings, telephone calls, and memos, and this information has become part of Task Force deliberations. The Task Force is now considering new ways to receive ideas and suggestions from interested employees across the Laboratory.

In January, PPPL Department and Division managers will be briefed on ORC results so they can initiate actions in their areas and contribute to the Task Force deliberations on Laboratory-wide matters. Following this, the Task Force findings will be presented to the Director and the Laboratory Council. In February, the Director in a State-of-the-Laboratory address will report actions he will take in response to the Survey.

This process takes time, but it is necessary in order to obtain a fuller understanding of what should be done to improve quality of life at PPPL and a broader commitment at all levels to the actions indicated. Moreover, the process will not end with the Director's State-of-the-Laboratory Message. The Director has asked the Task Force to continue to operate for at least a year in order to monitor the effectiveness of the response program and to consider mid-course corrections if needed.

ORC Action Notes

Some actions relating to the Survey are already being implemented. The Director and the Council yesterday approved a recommendation of the Job Training and Career Development Panel to offer courses at the Laboratory to help employees improve their skills and career potentials. Up to a dozen courses will be offered in the semester starting about February 1, 1987, ranging, for example, from English Composition, through basic math, physics and computer usage, to Digital Signal Processing. The courses will be taught by instructors from local colleges and by Laboratory staff. Specific course offerings will be announced in mid-January.

A second action by the Council was to appoint a committee of representatives from various staffs to review the Laboratory's Calendar of Social Events. The objective is to see whether the Laboratory's Morale Fund is being

(continued)

optimally used to meet the needs of employees. This Committee will review past events (e.g., the picnic, Christmas dinner dance, etc.) and new ideas and will report back to the Council by the end of February. The Committee membership is: Steve Iverson (Chairman), Tony Bleach, MaryAnn Brown, Angelo Candelori, Fred Dylla, Elmer Fredd, Dinah Larsen, Susan Murphy, Martha Redi, Barbara Sarfaty, and Jim Taylor.

New Government Travel Rules Take Effect

PPPL staff who travel on Laboratory business are experiencing significant changes in the way they plan and are reimbursed for trips.

On October 1, new Federal travel expense regulations went into effect, changing the rules for Government contractor personnel. PPPL business travelers will find the new policy to be fairly straightforward, but constraining, and some adjustments will be necessary, especially when planning a trip.

The most significant change affecting PPPL staff is the establishment of two per diem allowances, one for lodging and one for meals and incidental expenses (M&IE). The lodging allowance is dependent upon the locality, reflecting the fact that hotel and motel charges in and around major population centers are considerably higher than elsewhere. Rates range from a high of $93 for New York City to $30 for Tonopah, Nevada.

Meals and Incidental Expenses are limited by a separate per diem allowance for which there are only two rates, $25 and $33, depending upon location. The M&IE allowance covers costs for breakfast, lunch, and dinner; fees and tips to waiters, bellhops, etc.; laundry and dry cleaning; transportation between lodging and the place of business; and transportation related to meals.

PPPL managers have been provided with a list of approximately 500 geographical locations specifying lodging and M&IE allowances. I. Gusciora, Travel Services, can also supply this information.

Expenditures beyond the lodging and M&IE allowances are not reimbursable and are the responsibility of the traveler. However, as with all rules, there are exceptions. Travel expenses may be reimbursed on an actual expense basis under special or unusual circumstances. The traveler's department head must approve such reimbursements. These will be subject to audit.

Perhaps the most common exception for PPPL employees will involve travel to a conference or training course where lodging and meals must be procured at a conference center or hotel. Under these circumstances, when costs exceed the applicable per diem allowances, travelers may be reimbursed for actual subsistence expenses. Under no circumstances, however, will reimbursements exceed the sum of the two per diem allowances by more than 150%.

Obviously, there are other allowable travel costs not covered by either per diem allowance. For these, more general guidelines apply. For example, the actual cost of intercity travel may be claimed, but it should be at the government contracted rate or lowest available rate, if there is no contract. For air transportation, PPPL policy requires the use of discount airfare whenever possible. Transportation from the airport to hotel or business location and business telephone calls must be held to necessary and reasonable levels.

A new PPPL travel policy incorporating the new Government regulations will be issued shortly. It will detail the Laboratory's policies relating to travel approval, advances, registration fees, credit cards, rental cars, foreign travel, and reimbursement procedures, most of which remain unchanged.

Questions involving travel planning should be directed to Ilse Gusciora, ext. 2658. For information relating to reimbursement policies and procedures, staff should contact Ilse or Charles Kahil of PPPL Accounting, ext. 2699.

Suggestions Solicited

HOTLINE would like to receive input from PPPL employees as to the kinds of information and articles they would like to see published in the newsletter. Send your suggestions to: Carol Phillips, Room B366, C-Site.

The PPL HOTLINE is issued by the Princeton University Plasma Physics Laboratory, a research facility supported by the United States Department of Energy. Correspondence should be directed to PPL Information Services, Modul 2, C-Site, James Forresta Campus, ext. 2754.

PPPL HOTLINE
PRINCETON PLASMA PHYSICS LABORATORY

Vol. 8, No. 7 January 13, 1987

EMPLOYEE DEVELOPMENT PROGRAM COURSES TO START IN FEBRUARY

In response to a recommendation of the Laboratory's Follow-Up Task Force to the Opinion Research Corporation employee survey conducted here last summer, Director Harold Furth has approved the offering of a dozen training and developmental courses by the Laboratory to PPPL employees starting next month.

"The specific courses, to be announced in the next two weeks, are part of the PPPL Employee Development Program and will be offered on site for the benefit of both employees and the Laboratory," according to Jim Clark, Deputy Director for Administrative Operations and Chairman of the Follow-Up Task Force. "They are designed to help employees achieve job and career objectives by providing a way for them to strengthen their skills and knowledge and to enable PPPL to respond better to the programmatic and technological challenges that face us," he explained.

A brochure will be mailed to all employees later this month identifying the courses offered in the winter-spring period. The brochure will provide brief descriptions of the courses, the days and times the courses will be offered, and other information about enrollment. Textbooks and other instructional material needed for the classes will be provided. The courses will be taught by faculty from area colleges as well as qualified PPPL instructors.

"This will be a pilot effort to determine employee interest and gain experience in this area," according to Charlie Staloff who is leading the efforts of the panel on Job Training and Career Development. "We are planning initially to offer 12 courses that address interests expressed by employees and the needs of the Laboratory," Staloff stated. "The final course offerings will depend on enrollment. Generally, to make the investment required to sponsor a course, a minimum enrollment of 16 students will be needed. For some courses, which require access to a computer or involve the use of Laboratory facilities, a smaller enrollment would be permitted."

The courses, which will enhance an employee's skills in present or potential jobs, will be scheduled partly during working hours and partly on employees' personal time. "Whenever possible, they will be scheduled around the lunch hour and at the end of the work day," Staloff added. "We are sensitive to the possible difficulties that employees can incur when classes extend past normal quitting time."

Those interested in taking a course may begin the registration process by completing an application form which will be included in the brochure. Enrollment will require supervisory recommendations, as well as consideration of the development opportunity for the employee, the equitable distribution of opportunities among groups of employees, and Laboratory needs where these apply.

PPPL BIDS FAREWELL TO PLT

Present and former staff of the Princeton Large Torus (PLT) machine gathered in the device's control room Tuesday, December 23, 1986 to mark the close of operations of one of the world's longest running and most prolific magnetic fusion devices. Last plasma came at 11:07 a.m., 11 years and 3-1/2 days after start-up at 12:45 a.m., December 20, 1975. Only one other fusion device, the TFR at Fontenay-aux-Roses, near Paris, has operated longer.

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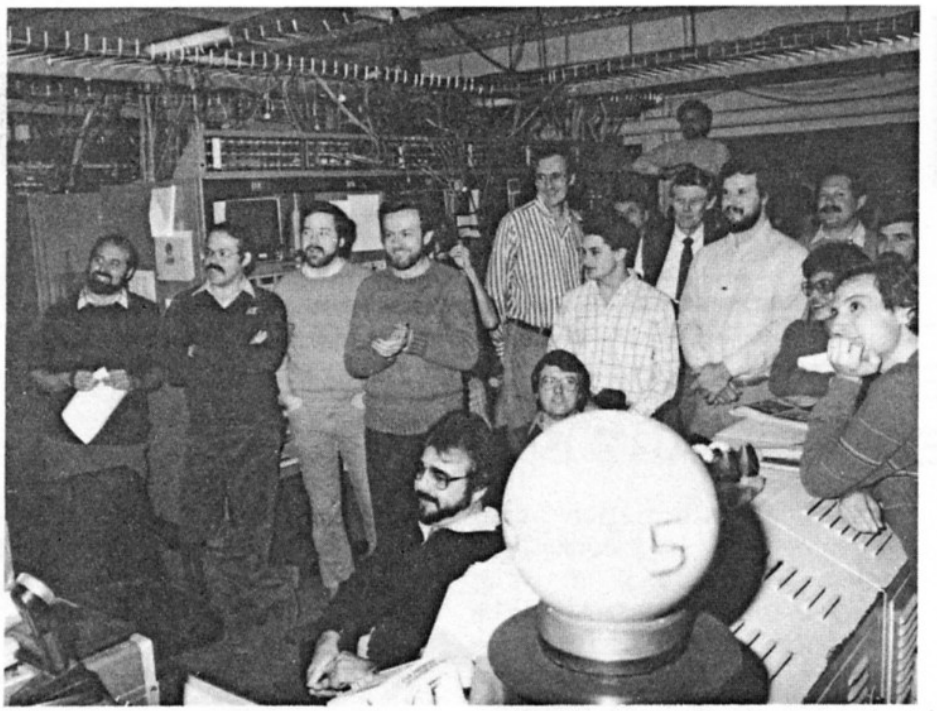

PPPL staff watch the countdown to the last PLT plasma on December 23.

During its lifetime, PLT established a number of world-record plasma parameters. Many staff will remember the "PLT weekend" in August of 1978 when the machine made headlines all over the world for its attainment of 65 million °C ion temperatures. In 1980, PLT exceeded this record by reaching 80 million °C. Both records were established using neutral-beam injection heating.

For the last four years, PLT has been used primarily for studies of radio-frequency heating and current drive. The machine has helped establish the efficacy of ion-cyclotron-resonance heating and has demonstrated the potential of lower-hybrid radio-frequency waves as a means of driving plasma current. The latter opens the possibility of steady-state tokamak operation, a requirement for sustained ignition in an Engineering Test Reactor.

Don Grove led the 3-1/2 year, $14 million PLT design and construction project and served as head of the PLT section of the Experimental Division. He was followed by Wolfgang Stodiek, Joel Hosea and, most recently, Stefano Bernabei.

NEW LOCATION

The Information and Administrative Services Branch, including the NBI Network and the Reports and Patents Office, was relocated to the third floor of the LOB during December. Check with the PPPL receptionist for individual room locations and new telephone extensions.

Travel Services has been temporarily relocated to the first floor of the LOB, room B-173. The telephone number remains the same, ext. 2658.

JANUARY SPEAKERS

Colloquiums

A series of colloquiums are given each year from September to June. They are held on Wednesday at 4:15 p.m. in the MBG Auditorium, unless otherwise noted. The January colloquiums include:

"Pattern Recognition and Machine Learning," by Nat Fisch, PPPL, 21 January.

"Short Wavelength Lasers," by Peter Hagelstein, Massachusetts Institute of Technology, 28 January.

SOSSO Seminars

The Secretarial and Office Support Staff Organization hosts a number of seminars during the year for the secretarial and office support staffs.

The January seminar, entitled "Benefits for the Bi-Weekly Staff," will be presented on Thursday, January 22, from 11:30 to 12:30 in the MBG Auditorium. The speakers will be Ms. J. Doig and Ms. N. Feldman from the Princeton University Personnel Department.

NONDESTRUCTIVE EXAMINATION CERTIFICATION COURSE

One dozen "students" have completed the first session of a new in-house training course on nondestructive weld testing developed through the PPPL Quality Assurance Branch.

The inclusion of tritium systems on TFTR, as well as the possibility of siting CIT at PPPL, prompted Dick Reny of the Quality Assurance Branch's Quality Control (QC) Department to plan the welding inspection course. The course will be instrumental in developing a group of PPPL-certified Level II inspectors in compliance with the American Society for Nondestructive Testing standard TC-1A.

The course also plays a crucial part in establishing baseline criteria for acceptable quality welds by setting acceptance and rejection limits. The training will enable QC inspectors to examine welds for compliance with specific codes, standards, and levels of quality.

Welders who take the course become aware of what QC inspectors are looking for when they make their inspections, and can monitor their own work accordingly. Although PPPL is a "custom shop," and is therefore exempted from some industrial codes, the course helps sharpen each welder's conformity to applicable standards.

Twelve employees drawn from various laboratory shops and Quality Assurance took the initial training course. The course provides 12 hours of training in liquid penetrant weld examination and 20 hours of training in visual examination of welds. Both practical and written examinations were given during the session.

The course is taught by instructors from United Engineering and Construction of Philadelphia. The firm, which conducts similar training courses for utilities, draws most of its teachers from the nuclear industry. Each instructor is very aware of the stringent standards and codes that must be adhered to.

Tom Frolo, a welding engineer at the Seabrook Nuclear Plant, taught PPPL's pilot course. The first portion of the session was devoted to liquid penetrant examination. Students were taught to detect surface defects in welding materials, ensuring the quality of products produced from those materials. Tom reported that his students "did very well" on the liquid penetrant exam.

During the visual examination portion of the course, a general knowledge of welding, materials, and codes was stressed. PPPL samples were used as illustrations, along with slides and photographs supplied by Frolo.

In highlighting the standards observed by industrial welders, Frolo emphasized that PPPL welders do "excellent work," and have accepted the standards "exceptionally well." Results of the visual exam are still being tallied.

Enrollment in future sessions of the welding course is limited to students selected by their supervisors. Supervisors should contact Dick Reny with their recommendations.

A course on mass spectrometer leak testing is slated for early this year.

by Kathy Dunn

"Students" examine certificates awarded for successful completion of the in-house training course on nondestructive weld testing. Standing, left to right: H. Dyer, J. Hicks, R. Borusovic, H. Howard (Quality Assurance and Reliability Division Head), A. Juhasz, W. Little, and R. Reny (course organizer). Seated, left to right: V. Bernhardt, E. Bush, J. Bennett, M. Candelori, R. Shamon. Not shown are J. Hengeli and M. Scott who also completed the course.

SAFETY TRAINING COURSES

The Occupational Medicine and Safety Office has scheduled the following safety training courses for February:

Course	Date/Time/Location
Crane Operator Refresher Course	10 February, 9:00 a.m., Theory Conference Rm
Hearing Conservation	12 February, 9:00 a.m., Safety Training Trailer
Basic Electrical Safety	19 February, 9:00 a.m., Safety Training Trailer
Radiation Safety Training	24-26 February, four hours each day, MBG Auditorium

Basic Safety Orientation for new employees is offered every Monday beginning at 8:30 a.m. in the Safety Training Trailer.

Employees must obtain permission from their immediate supervisor to attend these classes. Supervisors should call Mary Ann McBride at extension 3468 to enroll their employees.

MEETING CALENDAR

February 1987

09-11 **16th Plasma Physics Conf,** New South Wales, Australia. Contact: Ms. J. Watson, Conference Secretary, Australian Institute of Nuclear Science and Engineering, Private Mail Bag, P.O. Sutherland, NSW 2232, Australia.

14-19 **Annual Meeting of the American Association for the Advancement of Science,** Chicago, Illinois. Contact: R.M. Sinclair, Physics Division, National Science Foundation, Washington, D.C. 20550. 202-357-7997.

March 1987

16-19 **1987 Particle Accelerator Conf,** Washington, D.C. Contact: S. Penner, B102 Radiation Physics, Gaithersburg, MD 20899.

16-20 **General Meeting of the American Physical Society,** New York, New York. Contact: APS, 335 East 45th Street, New York, NY 10017. 201-251-9250.

More comprehensive meeting listings may be found in Nuclear Fusion, Physics Today, IEEE Spectrum, and Communications of the ACM.

CORRECTION

The recent HOTLINE article on the new government travel rules contained an error. When lodging and meals must be procured at a conference center or hotel, actual subsistence expenses may be claimed. Under no circumstances will reimbursements exceed the sum of the two per diem allowances by more than 50%, not 150% as stated in the article.

HOTLINE
PRINCETON PLASMA PHYSICS LABORATORY
Vol. 8, No. 8 February 4, 1987

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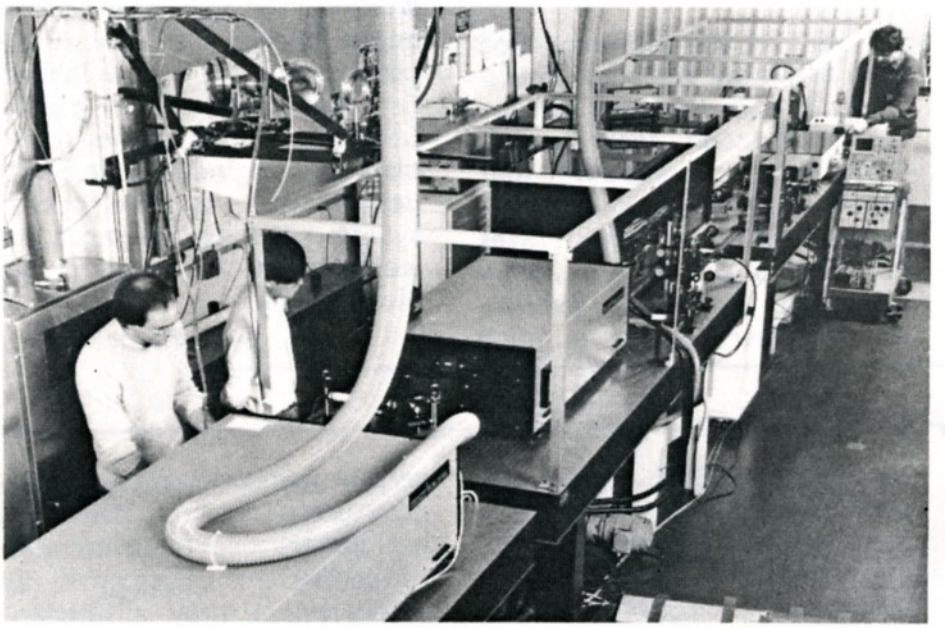

Bill Tighe, Chang Hee Nam, and John Robinson (left to right) adjust the optics on PPPL's powerful new picosecond laser system.

After 1-1/2 years of preparation, PPPL's X-ray laser group, headed by Szymon Suckewer, has successfully pulsed its new powerful picosecond laser system. Initial tests were conducted at powers up to 25 billion watts. When fully operational this summer, the laser system will be capable of one trillion watts output, making it one of the most powerful picosecond laser systems available anywhere.

The new laser will be used in conjunction with a CO_2 infrared laser to produce X-ray lasing action at wavelengths below ten nanometers, significantly shorter than past experiments. Most applications envisioned for X-ray lasers would require wavelengths below one nanometer.

For the past 2-1/2 years, PPPL researchers have routinely produced soft X-ray laser light at a wavelength of 18.2 nanometers, in a narrow beam with a power of about 100 kW. In the PPPL approach, a CO_2 laser pulse is focused onto a solid carbon disc. When the laser strikes the target, a dense carbon plasma column of 1-2 cm in length is produced. The column is held to a 1- to 2-mm diameter by a strong magnetic field which radially confines the plasma but allows free axial expansion. The plasma temperature rapidly increases to a point at which the carbon atoms become completely ionized, or totally stripped of electrons. The plasma is then allowed to cool rapidly by intensive radiation losses, causing ions to recombine with free electrons. Because recombination occurs primarily on the higher energy levels (outer orbits) while lower levels (inner orbits) do not capture electrons, an unstable condition known as "population inversion" occurs. Electrons in the higher energy levels then avalanche to the lower levels to bring about a more stable electron configuration. In the process, each electron loses energy in the form of a photon of X-ray light. The lasing process occurs when the photons produced in this fashion stimulate the emission of additional photons from other ions, starting a chain of such events. The result is an intense, soft X-ray pulse of a single wavelength.

Compared to conventional lasers, vast outlays of power are required to produce X-ray lasing action. The high-power requirements can be met, however, if the laser delivering energy to the plasma in order to create the X-ray la-

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sing action (the pumping laser) is fired for only a very small fraction of a second. PPPL's existing experiment utilizes a CO_2 laser with a 50 -80 nanosecond pulse length. A nanosecond is one billionth of a second. A picosecond is one trillionth of a second, an extremely short interval during which light can travel only one-eightieth of an inch.

In its current configuration, PPPL's new picosecond laser system is comprised of a chain of six individual lasers which interact successively in stages to finally produce a 25-billion-watt picosecond pulse of ultraviolet light with a wavelength of 250 nanometers.

Later this year, the action of a 1.0-1.5 kilojoule CO_2 laser will be combined with that of a one-terawatt picosecond laser system. The CO_2 laser will irradiate a target to create a carbon plasma. A 150-kG magnetic field will confine the plasma column, which will then be irradiated by the picosecond laser pulse.

By creating the carbon plasma with one laser and then irradiating it with the very powerful picosecond laser pulse, PPPL researchers predict that plasma ions can be selectively excited to high-energy states creating a population inversion. This approach is expected to allow access to much higher energy transitions than previously available and so provide X-ray lasing action in a shorter wavelength (higher energy) spectral region, significantly below ten nanometers. The X-ray laser team will also attempt to increase the population inversion and gain at 18.2 nanometers utilizing the two laser approach.

Work on the two-laser system began during FY85 with the construction of a new laboratory adjacent to the original facility. At that time, physicists and engineers also began design work on the optical system and target area, as well as on the magnet and diagnostics.

by A.R. DeMeo, Jr.

Applications for X-Ray Lasers

Scientists envision a multitude of applications for X-ray lasers in a variety of fields including physics, electronics, biochemistry, and medicine.

Medical applications are perhaps of the broadest interest, especially diagnostics. The finely focused X-ray laser would allow a much higher degree of localization in the use of CAT scanners, thereby lowering patient exposure considerably. The higher resolution afforded by the laser would provide greater detail of the subject.

Closely related are many biological applications including the ability to make three-dimensional pictures, or holograms, of molecular structures such as DNA. X-ray lasers would allow biological structures to be viewed in detail in their natural environments, since specimens would not require special (usually destructive) preparation as in electron microscopy.

In the field of electronics, X-ray lasers might be used in photolithography to "print" complex integrated circuit patterns onto to semiconductors, allowing even greater miniaturization for a myriad of electronic devices ranging from satellite components to television sets.

Finally, but not of least importance, are a host of apparent applications in physics and chemical research. Plasma physicists would use X-ray lasers in measurements of temperature, impurity densities, and ion transport. In the area of solid-state physics, X-ray lasers would allow a substantial improvement in the ability to analyze the structure of crystalline solids and surfaces. Advances in the use of spectroscopy for chemical analysis would also be possible utilizing the X-ray lasers inherent brightness and narrow energy linewidth. These features might lead to more precise instrument calibration through the ability to stimulate a few select atomic transitions. Because of the speed with which X-ray lasers operate, chemists could be given the opportunity to analyze short-lived chemical intermediates.

The PPL HOTLINE is issued by the Princeton University Plasma Physics Laboratory, a research facility supported by the United States Department of Energy. Correspondence should be directed to PPPL Information Services, B380, C-Site, James Forrestal Campus, ext. 2754.

Visions of a World Peace

"Giving life to a vision of the world at peace" is why the Living Visions Ensemble will raise its voice in song at the Princeton University Chapel on Friday, February 6 at 8:00 p.m.

The ensemble is a professional choir of thirty-six singers, most of whom are, or have been, students at Westminster Choir College in Princeton. The ensemble performs benefit concerts of "classical" music for organizations that work to eliminate hunger, poverty, illiteracy, and homelessness; the "hidden" obstacles to peace. The ensemble also serves an educational purpose. Each concert includes guest speakers who use their professional expertise to address the issue of severe deprivation and the disruptive influence it has on world peace.

Janet Davis is the conductor of the ensemble and founder of its parent organization, C-Major Visions, Inc. She created the ensemble with two purposes in mind: to perform benefit concerts for those in need and to actualize a vision of using music as a healing and unifying force in the world.

This vision will become a reality in February. The Living Visions Ensemble will perform their first major work, the world premiere of "Unispace" by R. Davidson. "Unispace" was written to commemorate the 1982 international Unispace Conference convented by the United Nations in Vienna, Austria. All of the space-faring nations of the world gathered at the conference to explore the peaceful uses of outer space.

The beneficiary for this concert is UNICEF, the United Nations Children's Fund. UNICEF has programs in underdeveloped countries to aid children by providing medical care, growth monitoring, oral rehydration to combat malnutrition, and education training.

The Living Visions Ensemble will present concerts in Princeton, NJ on February 6; Washington, D.C. on February 8; Manhattan, N.Y. on February 13; and Philadelphia, PA on February 15.

There is no fee for the concert, although a suggested donation of $12.00 per person can be paid at the door. Donations in any amount are welcomed.

Art Exhibit

The Squibb Gallery is currently showing "Landscapes: Real and Imagined." The display, which includes work by ten painters and one photographer, will run until March 8th.

Following "Landscapes," the gallery will feature the mixed-media work of several black artists. This exhibition will run from March 22nd to May 7th.

The Squibb Gallery is located in the world headquarters of the Squibb Corporation located on Route 206, three miles south of Princeton. Gallery hours are 9:00 a.m. to 5:00 p.m. Monday through Friday, and from 1:00 to 5:00 p.m. on weekends. Thursday gallery hours are extended to 9:00 p.m.

Bowling Update

The "Low Rollers" bowling team won the first half of the 1986/1987 Princeton University Mixed League.

Facing stiff competition from the second place team, Low Rollers team members Noreen Cruser, Matt Lawson, John Luckie, Kim Prutky, and Jerry Siminoff won 75 games and lost 44.

The bowling league is composed of eight teams that compete against each other every Wednesday at Colonial Lanes, Route 1, Lawrenceville. The season is divided into two halves, with the winner of each half rolling off against the other for the league championship.

A banquet honoring the champions and the winners in various other categories takes place in the spring. If you are interested in substituting for the league or in joining a team for next season, contact league secretary Sarah Thomas at ext. 3711.

Search Begins for Deputy Director

A search for Deputy Director for Technical Operations began in January. Advertisements were placed in The New York Times, The Wall Street Journal, SCIENCE, and SPECTRUM.

Internal and external nominations from members of the Laboratory staff for the post are now in order. Please send nominations to Mary L. Shoaf, LOB B333C.

FEBRUARY SPEAKERS

Colloquiums

A series of colloquiums are given each year from September to June. They are held on Wednesday at 4:15 p.m. in the MBG Auditorium, unless otherwise noted. The February colloquiums include:

"Transport on TEXT," by Alan Wootton, Fusion Research Center, University of Texas at Austin, 4 February.

"NRL Program in High-Power Gyrotrons," by Wallace Manheimer, National Research Laboratory, Washington, D.C., 11 February.

"Safeguards and Proliferation Aspects of Fusion," by Leslie Fishbone, Brookhaven National Laboratory, Tuesday, 17 February.

"Hot Rock Program," by Hugh Murphy, Los Alamos National Laboratory, 25 February.

SOSSO Seminars

The Secretarial and Office Support Staff Organization hosts a number of seminars during the year for the secretarial and office support staffs.

Due to the snow storm on Thursday, January 22, the SOSSO seminar entitled "Benefits for the Bi-Weekly Staff," is rescheduled for Wednesday, February 4, 11:30-12:30 in the MBG Auditorium.

The February seminar, entitled "Listening with Corporate Ears, Between the Lines, and to Your Inner Self," will be presented by Ms. Barbara Chilakos, a Human Resource Consultant. It is scheduled for Thursday, February 19, from 11:30 to 12:30 in the MBG Auditorium.

TRANSITIONS

New Hires

The HOTLINE welcomes the following new employees:

Charles Walling, who joined PPPL in December as a Scientific Applications Programmer in the Computer Division.

Sandra Nemeroff, who joined PPPL in January as a Scientific Applications Programmer in the Computer Division.

Dwight Bashore, who joined PPPL in January as an Electrical Engineer in the Computer Division.

Promotions

The HOTLINE offers its congratulations to the following employees, who recently received promotions.

Dawn Horner, who was promoted in December to Staff Assistant IV in the Accounting Department.

Virginia Zelenak, who was promoted in January to Secretary VII in the Computer Division.

Births

The HOTLINE offers its congratulations to the following employees, who recently became proud parents:

John Robinson of the X-Ray Laser Project and his wife, Trish, whose daughter, Heather, was born on November 18.

Kenneth Andreas of TFTR and his wife, Janet, whose son, Kenneth Ray, was born on December 1.

Ray Pressburger, Jr. of the MG Section and his wife, Lisa, whose daughter, Laura Emily, was born on December 16.

John Bauer, Jr. of Maintenance and his wife Luann of Motor Pool, whose daughter, Shannon April, was born on January 2.

Yvonne Harris of Janitorial Services and her husband, Robert, whose daughter, Alexis Nicole, was born on January 13.

Sheryll Poris of Personnel and her husband, Carl, whose son, Eric Michael, was born on January 19.

NEW LOCATION

The Personnel Division was relocated to the first floor, west wing of the LOB during January. All telephone extensions will remain the same. Check with the PPPL receptionist for individual room locations.

FOR SALE: 1978 Skyhawk; air conditioning, am/fm radio. Good condition. Call Marilyn Hondorp, ext. 2656.

The potential for employees to hurt their backs during the next few months while relocation and moving of offices takes place at the Laboratory is great. In an effort to help prevent these injuries, a Safety Bulletin was issue describing the correct methods to use when lifting heavy loads. These tips are listed below.

- Plan your move. Don't overestimate your physical abilities.
- Grasp the item to be moved firmly with full palm grips, not just your fingertips. If the item is low, squat and use your legs to lift, not your back.
- Carry the load close to your body. When turning, turn with your feet and not by twisting your back.
- Set the load down by bending your knees, not by bending your back. Keep your fingers out from under the load.
- Under no circumstance should a pregnant woman participate in the heavy physical labor of moving.
- Don't be afraid to ask for help. Persons who are not used to physical labor are especially prone to injury during moves. Furniture moving and heavy lifting should be left to the professionals.

The Occupational Medicine and Safety Office has a one hour back injury prevention program. It is highly recommended for personnel involved in moves. To attend, have your supervisor call Mary Ann McBride at ext. 3468.

IN FUTURE ISSUES

- PPPL leads in percentage increase in contributions for United Way Campaign
- PPPL relocation and consolidation efforts remain on schedule
- TFTR operates with new ion sources
- PU reaffirms EEO policy

Tour Guides

During October, November, and December 1,222 visitors were taken on guided tours of the Laboratory. November led the period with 24 tours and 511 visitors. We'd like to thank the tour leaders who conducted the tours.

OCTOBER

Charles Bushnell
Hsi Feng
Robert Fleming
George Gammel
Charles Gentile
Glenn Grotz
Daniel Huttar
Naren Kokatnur
Frank Lawn
Benoit LeBlanc
George Levitsky
George Martin
Ernst Nieschmidt
Doug Post
Ronald Radeztsky

NOVEMBER

Dale Ashcroft
Norton Bretz
Lloyd Ciebiera
Dave Ciotti
Larry Dudek
Fred Dylla
Hsi Feng
Joseph Fennimore
Robert Fleming
John Frankenberg
George Gammel
Phil Heitzenroeder
Naren Kokatnur
Paul LaMarche
Doug Loesser
Milt Machalek
George Martin
John Murray
Ernst Nieschmidt
John Quanci
Richard Reny
Stan Schweitzer
Robert Smart
Joseph Stencel
John Tobin
Mike Ulrickson
Al von Halle

DECEMBER

William Blanchard
Dave Ciotti
Hsi Feng
Robert Fleming
James French
Charles Gentile
Boris Grek
Donald Harnsberger
John Johnson
James Kamperschroer
Naren Kokatnur
Benoit LeBlanc
George Levitsky
Milt Machalek
George Martin
Ernst Nieschmidt
Gary Oliaro
Dave O'Neill
John Quanci
Allan Ramsey
Teguo Saito
Stan Schweitzer
Steve Scott
S. von Goeller
Irving Zatz

Why are These People Wearing Funny Hats ?

Quality Control Technician Wayne Sloyer (left) and Neutral Beam Ion Source Technician Donald West (right) joined forces to perform a dimensional inspection of the Long Pulse Ion Source (LPIS) flange and cuff assembly. The flatness of the flange surface is critical to LPIS operational reliability when installed on TFTR. It had to be held to a difficult 0.005-inch TIR to avoid cracking a casted epoxy insulator. (TIR stands for total indicated reading, which is the total distance between two parallel planes that contain the entire surface being measured.) The welding and machining operations were planned and executed successfully by PPPL's Vacuum Shop. All dimensional verification work was performed under controlled conditions within the CAS Building Clean Room--hence the unique headgear. Training people to perform precision measurements while simultaneously wearing funny hats is another example of Ken Wright's successful management style.

PPL HOTLINE
PRINCETON PLASMA PHYSICS LABORATORY

Vol. 8, No. 9 February 6, 1987

FIVE-YEAR CONTRACT SIGNED

Princeton University Provost Neil Rudenstine (left) and Hilary Rauch (right), Manager of the USDOE's Chicago Operations Office, shake hands after signing the new five-year contract (insert). At the center is Princeton University President William G. Bowen.

The U.S. Department of Energy (DOE) and Princeton University signed a new five-year contract on Tuesday, 3 February. Under the contract, which is for fiscal years 1987 through 1991, the University will continue to manage and operate the Laboratory for the government.

Underscoring the University's long-term commitment to the Laboratory, the contract includes a new forty-year lease of seventy-two acres of University land at the Forrestal campus.

In extending the arrangement, both the University and the Department of Energy anticipate that PPPL will be the site of the proposed major next step in the nation's fusion program, the Compact Ignition Tokamak (CIT).

The CIT is expected to be the world's first ignited fusion experiment and is the first major initiative in the U.S. toroidal fusion research since approval of the Tokamak Fusion Test Reactor in 1975.

"The federal government's relationship with Princeton has been long and fruitful," said Hilary Rauch, manager of the U.S. Department of Energy's Chicago Operations Office. "And the future seems as bright as a plasma with the proposal for the Compact Ignition Tokamak at the Laboratory."

PPPL Employees Show Their Concern

The United Way Campaign was a resounding success at PPPL. Increases were registered in all areas: total dollars given, number of persons participating, and average amount of donation. Complete details forthcoming in a future issue of the HOTLINE.

Safety Training Courses

The Occupational Medicine and Safety Office has scheduled the following safety training courses for March:

Course	Date/Time/Location
Right to Know	3 March, 9:00-10:00 MBG Auditorium
Crane Operator Refresher Course	5 March, 2:30-3:30 Safety Training Trailer
Chemical Handling	11 March, 8:15-11:00 (instruction) 1:00- 2:00 (test) Theory Conference Room
Chemical Handling	18 March, same schedule as above Theory Conference Room
Lockout/Tagout	19 March, 1:30-2:30 Safety Training Trailer
First Aid	24 March, 8:30-12:00 Safety Training Trailer

Employees must obtain permission from their immediate supervisor to attend these classes. Supervisors should call Mary Ann McBride at ext. 3468 to enroll their employees.

A mandatory training program for Area Safety Coordinators will begin in March. Supervisors should contact Mary Ann McBride at ext. 3468 to schedule training sessions for their coordinators.

Basic Safety Orientation for new employees is offered every Monday beginning at 8:30 a.m. in the Safety Training Trailer.

Obituary

The HOTLINE offers its condolences to the family of James N. Cook who died on January 23rd.

Mr. Cook was a Technical Associate in the Mechanical Engineering Division and had been a Laboratory employee since 1976. He is survived by his wife, Frances, and his daughter, Debbie.

The PPL HOTLINE is issued by the Princeton University Plasma Physics Laboratory, a research facility supported by the United States Department of Energy. Correspondence should be directed to PPPL Information Services, B380, C-Site, James Forrestal Campus, ext. 2754.

HOTLINE
PRINCETON PLASMA PHYSICS LABORATORY

Vol. 8, No. 10 February 18, 1987

EDP-SPONSORED COURSES BEGIN EMPLOYEE RESPONSE HEAVY

Improving written communication skills will be the focus of the class taught by Dr. Michael Shea from Mercer County Community College.

Classes began Tuesday, February 10, for courses offered as part of the Laboratory's new Employee Development Program (EDP). Approximately 220 PPPL employees registered to take the 12 courses offered during the Program's initial term.

According to Charlie Staloff, Chairman of the Training and Development subcommittee of the ORC Survey Response Team, applications for enrollment were greater than expected. "Considering the short time employees had to apply," he said, "we were pleased to see the broad interest shown."

Members of the subcommittee and sponsors for the individual courses met February 5 to review applications and make course assignments. Even with the higher than expected applications, Staloff said that nearly all those who applied were accepted into their first or second choice courses.

"We regret that a small number of employees who listed only a first-preference course were unable to be enrolled. More than half of the courses were oversubscribed. We expanded participation for these courses where we could but still were unable to satisfy all the applicants," Staloff said. In other cases, he said, employees were registered in courses they had listed as alternatives.

Software-oriented courses, such as WordPerfect and dBase III+ are still being scheduled. These are shorter courses and multiple sessions will be held to meet employee interest. Enrollment in each course is limited by the size of the teaching facility. According to Jane Birtwistle, Manager of the Guided Learning Center, employees will be contacted as the courses are scheduled.

Linda Lam from Mercer County Community College will teach the Basic Math and Algebra class offered this term through the EDP.

Consolidation Efforts on Schedule

Efforts to relocate personnel and equipment now at A- and B-Sites by September 30, 1987 remain pretty much on schedule, according to Jack Joyce. Jack is Chairman of the Oversight Committee (see Table 1) responsible for overseeing Laboratory consolidation efforts.

Table 1. Oversight Committee.

J. Joyce, Chairman
D. Meade
R. Rossi
R. Sheldon
E. Simon
M. Johnson, PAO*

*Princeton Area Office

A three-part relocation plan, implemented last fall, addresses the three main elements needed to meet the September '87 deadline. Subcommittees are responsible for planning and directing activities for each part of the plan. Table 2 provides a list of the milestones and dates for the individual elements; their current status are summarized below.

Table 2. Relocation Milestones.

High-Bay Shop Construction

Milestone	Date
Conceptual Design	September 1986
Contract Award	October 1986
Site Work, Footings and Floor	February 1987
Building Construction	March 1987
Material Disposition	June 1987
Building Construction Complete	June 1987
Move Complete	September 1987

Consolidation/Leasing of Space

Milestone	Date
C and D Site Space Identified	September 1986
Leased Space Requirements Identified	October 1986
DOE Approval for Leased Space	January 1987
Group Location Plan	January 1987
Lease Signed	February 1987
Space Available	May 1987
Move Complete	July 1987

New Building

Milestone	Date
Establish Space Requirements	November 1987
Conceptual Design Complete	April 1987
Build/Lease Analysis	June 1987
Additional Milestones to be Established	

High-Bay Shop

Planning for a new high-bay building at C-Site to house the heavy equipment and large shops at A- and B-Sites started in September. The building will be an addition to the CAS Building, which is located south of the Switchyard and Maintenance Building (see map).

The conceptual design was approved and building contracts were awarded in October. Site work on the foundation is in progress. Building construction will begin in March and is scheduled for completion by June.

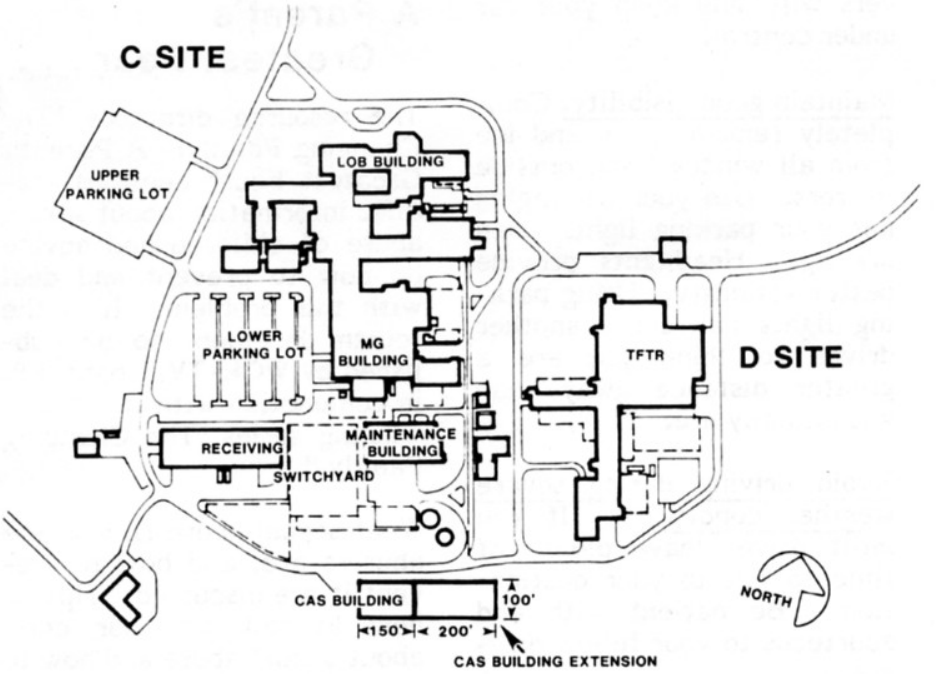
Material and equipment accumulated at A and B Sites during the past 35 years is being looked at to determine if it should be moved or if it can be excessed or scrapped. Relocation of equipment and machinery to the building will occur during the summer.

Completion of this element of the relocation plan is scheduled for September 1987.

Consolidation and Leasing of Space

Space to house about half of the PPPL employees now at A- and B-Sites was identified at C- and D-Sites. Relocations and modifications to existing space were initiated. In October, a "Group Location Plan" was drafted identifying employee groups to be located together (for example, accounting, personnel, procurement, etc.) and their eventual

(continued)



Map of C- and D-Sites. The new high-bay shop is located at the bottom near the center of the map.

locations. While this effort is basically complete, a few details remain to be worked out over the next months.

Concurrently with consolidation efforts, procedures to lease off-site commercial space were started. The amount of off-site commercial space required was determined--approximately 40,000 sq ft--and the geographical location was selected--an area east of Lake Carnegie, north of Plainsboro Road, west of the mainline of the Amtrak roadroad, and south of New Road. Approval by the Department of Energy (DOE) to advertise for space was granted and a Request for Proposal (RFP) was advertised in the local newspapers.

Evaluation of the bids, review of the space, and selection of the property will be completed by the end of February and a lease will be signed. Six weeks have been allotted for this activity because time is needed to finalize the lease and to determine the "build out." When office space is selected it is often absolutely bare. There may be nothing there, no walls, no doors, no partitions, nothing. The landlord needs to be told how the space is to be subdivided, the size of the rooms, the amount of open space, what kind of carpets, what color of paint, etc. The landlord then "builds out" the space. This takes a maximum of 90 days.

Moving of personnel and equipment will occur during May, June, and July. Completion of this element of the relocation plan is scheduled for July 1987.

New Building

Construction of a new Engineering Office Building to house PPPL staff temporarily located off-site is the third element of the relocation plan. Estimated to cost somewhere between 5-7 million dollars, the new building will have to be a separate item in the Department of Energy's budget proposal to Congress. For this to happen, PPPL must prepare a formal conceptual design and construction proposal for DOE. Since the fiscal year 1988 budget has already been submitted, the earliest the proposal could appear in a budget request is fiscal year 1989. After congressional approval, construction would take about three years.

The building's size and location are presently under study. A conceptual design is expected in April 1987. At this point, a build/lease analysis will be done to determine the cost effectiveness of a new building. Additional milestones will be established later.

by Carol Phillips

Winter Months Mean Hazardous Driving Conditions

Winter has arrived! Four snow storms in three weeks is ample proof for most of us. Still, according to the record books, February is when New Jersey receives its heaviest snow falls. Now is the time to refresh your memory on the ways you can increase your safety on the road during the winter.

Keep your car in good operating condition. Your brakes, heater, defroster, and windshield wiper systems should all be working properly. Replace your old and worn wiper blades with new ones.

Make sure you install your snow tires before the bad weather arrives. Check them

(continued)

for wear and keep them inflated to the proper pressure. Use chains if possible.

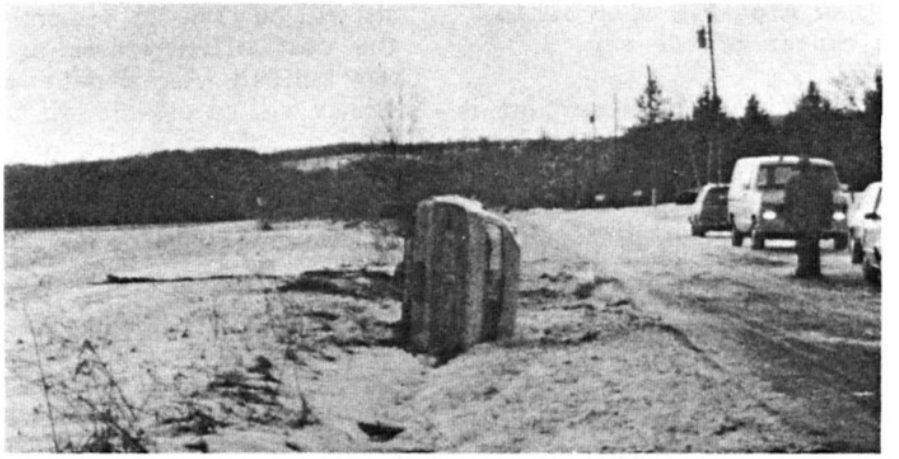
Adjust your speed to road conditions. Allow more space between you and the car ahead. Remember, it takes two to twelve times more distance to stop on a winter-slick road surface than on a dry one.

Avoid sudden stops. Breaking hard on a slippery surface can lock the wheels and cause a skid. Pump the breaks lightly and rapidly. Start braking sooner.

Don't oversteer or make sudden changes in direction. Slow, smooth, gradual maneuvers will help keep your car under control.

Maintain good visibility. Completely remove snow and ice from all windows and outside mirrors. Use your headlights not your parking lights when driving. Headlights provide better visibility. Using parking lights can cause another driver to think you are a greater distance away than you actually are.

Avoid driving during severe weather conditions. If you must drive, leave plenty of time to get to your destination. Be patient with and courteous to your fellow drivers.



Shoemobile

The Iron Age Shoemobile will be at PPPL during February. Date, times, and locations are given below:

Date	Time	Location
26 Feb 87	8:00-12:00	Next to Receiving #3
	12:30- 4:30	Next to Receiving #3
27 Feb 87	8:00-12:00	Next to B-Site Stockroom
	12:30-4:30	Next to Receiving #3

Safety shoe withdrawal slips are available at the C-Stockroom, B-Stockroom, and the Inventory Control Office, 1-E Bldg, Rm 206, A-Site.

Questions can be directed to June Hyman, ext. 3475, or Marie Steer, ext. 3476.

A Parent's Greatest Fear . . .

The resource directory "The Changing Family: A Parent's Greatest Fear" contains specific information about sexual abuse of children and advice on how to prevent and deal with this problem. It is the fourth document to be published by WOR-TV, Channel 9, in conjunction with its award-winning series "The Changing Family."

What sexual abuse is, who the abusers are, and how to prevent it are discussed. Tips on how to talk to your child about sexual abuse and how to recognize the signs of sexual abuse are presented.

Information on books and publications as well as a list of agencies and organizations that can provide help, information, referral, and counseling or treatment for abused children are given.

"The Changing Family: A Parent's Greatest Fear" is available free of charge from WOR-TV. Those interested should write:

A Parent's Greatest Fear
WOR-TV
9 Broadcast Plaza
Secaucus, NJ 07094

The PPL HOTLINE is issued by the Princeton University Plasma Physics Laboratory, a research facility supported by the United States Department of Energy. Correspondence should be directed to PPPL Information Services, B380 C-Site, James Forrestal Campus, ext. 2754.

PPPL HOTLINE
PRINCETON PLASMA PHYSICS LABORATORY
Vol. 8, No. 11 March 4, 1987

MANAGERS DISCUSS ORC SURVEY RESULTS WITH STAFF

PPPL is now in the midst of an important follow-up process relating the results of the ORC employee opinion survey to a plan of action. Department, project, and division managers recently received results from the survey reflecting the concerns of their staff and how these results compared to those for the Laboratory as a whole. Managers are now discussing this information with their employees.

"The method managers use to share survey results with their staff will vary from unit to unit," said Bill Johnson, PPPL's Employee Relations Manager and participant in the Director's Follow-Up Task Force. "Some managers are meeting with their entire unit at one time, while others are meeting with smaller groups of employees."

"In a few cases, the survey responses may be ambiguous," Johnson continued. "Suppose, for example, that a division's ratings were lower than those for the Laboratory in the area of working conditions and equipment. Does this mean that the environmental conditions, such as noise levels, temperature, etc. are the problem, or does it mean that the equipment, such as tools, word processors, computers, etc. need improvement, or is it something else? We hope that these discussions will help us to identify the specific problems."

Managers and staff from Information and Administrative Services discuss ORC survey results with Administration Department Heads Dick Rossi and Bob Smart.

In addition to sharing results and seeking clarification, managers are also encouraging employees to make suggestions or recommendations. Managers and employees can then work together to find mutually acceptable solutions. For example, according to Johnson, "one manager had his initial feedback session with his entire division and now has representatives of the various staffs working on specific areas of concern."

The Director's Follow-up Task Force is finishing its work, and its recommendations are now being discussed in the Laboratory Council. The Director's action on these recommendations will be announced to the Laboratory in his State of the Laboratory message now scheduled for March 13 (specific times for the three sessions to be announced). Other actions arising from the ORC survey, such as the Employee Development Program training and developmental courses at PPPL, are presently underway.

PPPL EMPLOYEES SHOW THEY CARE

PPPL set a record when plasma temperatures of 200 million degrees Celsius were reach on TFTR, and Laboratory employees set another record--this one for generosity--when they contributed over $21,100 in support of this year's United Way Fund Drive.

When all the tallies were in, 43% of PPPL employees had contributed to Princeton area community activities through the United Way. This compares to a 32% participation rate last year and 11% the year before, and places the Laboratory near the top in terms of improved employee participation rate -- an achievement that was singled out by United Way officials at the final Campaign meeting. In fact, the Laboratory's participation rate was twice that of the rest of the University.

Laboratory results were equally impressive in terms of dollars given. PPPL increased its 1985 total of $15,000 to $21,100 in 1986, or about 40%. In so doing, the average donation per contributor increased by 10%, which met our goal.

Steve Iverson (left), Jack Joyce (center), and Rosemary Fuccello (right) represented PPPL at the 1986 United Way's Annual Meeting and Awards Presentation Ceremony. Jack is a member of the United Way's Board of Trustees and Rosemary was the PPPL United Way Representative.

"Overall this represents an outstanding response to the United Way. We have clearly expressed our concern for people in need in our local communities, and PPPL employees can truly be proud of their accomplishment," said Jim Clark, Deputy Director for Administrative Operations and PPPL's United Way Campaign chairman. "I wish to extend to all campaign workers and donors the sincere thanks of the United Way and the agencies it serves."

NEWS BITS

PPPL Principal Research Physicist James Sinnis was selected to serve on the campus Advisory Committee on the Presidential Search. The Committee, which will work closely with the trustees in their search for Princeton's next president, is composed of eight faculty members, four students, two professional staff members and one alumnus.

The PPL HOTLINE is issued by the Princeton University Plasma Physics Laboratory, a research facility supported by the United States Department of Energy. Correspondence should be directed to PPPL Information Services, B380, C-Site, James Forrestal Campus, ext. 2754.

HOTLINE
PRINCETON PLASMA PHYSICS LABORATORY

Vol. 8, No. 12 April 1, 1987

STAFF REPRESENTATIVES SOUGHT FOR ORC FOLLOW-UP TASK FORCE

In his State-of-the-Laboratory address on March 13, Director Harold Furth announced plans to expand membership in the Follow-up Task Force on the ORC Attitude Survey. The current Task Force, established last fall, has recommended a series of Laboratory-wide actions in response to employee concerns expressed in the Survey. These recommendations were summarized by Harold Furth in his talk last month. These actions include initiation of on-site employee training and development, expanded supervisory training, steps to improve two-way communications between managers and employees, reorientation of the HOTLINE, and modifications in the personnel appraisal process.

According to Task Force Chairman Jim Clark, one non-supervisory employee from each of the six staff groups (Lab and Shop, Senior Lab and Shop, Office and Support Staff, Administration, Engineering and Scientific Staff, and Research Staff) will be invited to join the Task Force in helping to implement the approved recommendations and to develop additional recommendations. "The object of the effort is to strengthen Laboratory performance, enhance staff capabilities, and improve the quality of work-life at PPPL," Clark explained. "Harold Furth has asked that the expanded Task Force continue in operation for at least a year," he added.

Employees who are not supervisors and who are interested in participating are asked to complete the nomination form and forward it by Monday, April 6 to Deputy Director for Administrative Operations, Jim Clark, Chairman of the Follow-up Task Force, Room B384, C-Site.

ORC SURVEY FOLLOW-UP TASK FORCE NOMINATION FORM

_____ Name	_____ Lab Phone
_____ Organization	_____ Job Title
_____ Supervisor's Name	_____ Years of PPPL Service

STAFF (please check staff affiliation):

____	Research	____	Senior Lab and Shop
____	Engineering and Scientific	____	Lab and Shop
____	Administrative	____	Office and Clerical

PLEASE PRINT CLEARLY. RETURN TO JIM CLARK, CHAIRMAN FOLLOW-UP TASK FORCE, ROOM B384, C-SITE, BY MONDAY, APRIL 6.

OBITUARIES

Henry Chandler, Jr. died March 27 after a short illness. A long-time employee of PPPL, he joined the Laboratory as a member of Project Matterhorn in 1959. At the time of his death, he was Head of the Motor Generator Section in the Engineering Department.

He is survived by a niece, Diana Kenner, and a nephew, Stephen Dilworth.

A memorial service will be held at the Princeton University Chapel on Thursday, April 2 at 1:30 p.m.

The family has requested that in lieu of flowers donations be made to the Hill School in Pottstown, PA or to the Princeton University Class of 1942.

John Woolsey and his wife, Kathleen, died March 27. He was employed at the Laboratory since 1978 as a Technician in Technology Operations.

They are survived by their four children, John Patrick, Joseph, Gregory, and Kristen.

Donations can be made to the J. Woolsey Children's Fund, Hamilton Fire Company, 1805 E. State Street, Trenton, NJ 08609.

Joseph Bottinelli, who retired in 1983 after 23 years as a technical associate in the Engineering Division Vacuum Section, died in October.

He is survived by his wife, Gertrude, and his brother, Edward.

John Leary, who retired in 1979 after 19 years as a technician in the Engineering Division MG Section, died in mid-February.

STATE of THE LABORATORY MESSAGE AVAILABLE to EMPLOYEES on VIDEOTAPE

Director Harold Furth presented the State of the Laboratory message on March 13. His presentation was videotaped and is now available for viewing by Laboratory staff. Managers are encouraged to show it to employees who were unable to attend. Contact the Photo Lab, ext. 2090, to make arrangements for group viewing of the video.

The talk is also available on VHS videotapes which may be borrowed by PPPL personnel for home showings. Contact Pat Stephens, ext. 2750, to checkout a copy.

SAVE THE DATE!

Saturday, May 2 has been tentatively selected as the date of a Family and Community Day open house at PPPL. TFTR will be open for visitors, as well as PLT, PBX, and S-1. Displays on the Laboratory program and refreshments are planned. Diane Carroll is coordinating the arrangements, and she can be reached at ext. 2751. Plan to bring your family and friends for a fun and informative day.

APRIL SPEAKERS

A series of colloquiums are given each year from September to June. They are held on Wednesday at 4:15 p.m. in the MBG Auditorium, unless otherwise noted. The March colloquiums include:

"Spacial and Temporal Characteristics of Decreasing Stratospheric Ozone," by Donald Heath, Goddard Space Flight Center, Maryland, 1 April.

"Alternate Energy Strategy to 2020," by Robert Williams, Center for Energy and Environmental Studies, Princeton University, 15 April.

"Recent Research in Muon Catalyzed Fusion and Fusion with Polarized Nuclei," by Russell Kulsrud, Princeton Plasma Physics Laboratory, 22 April.

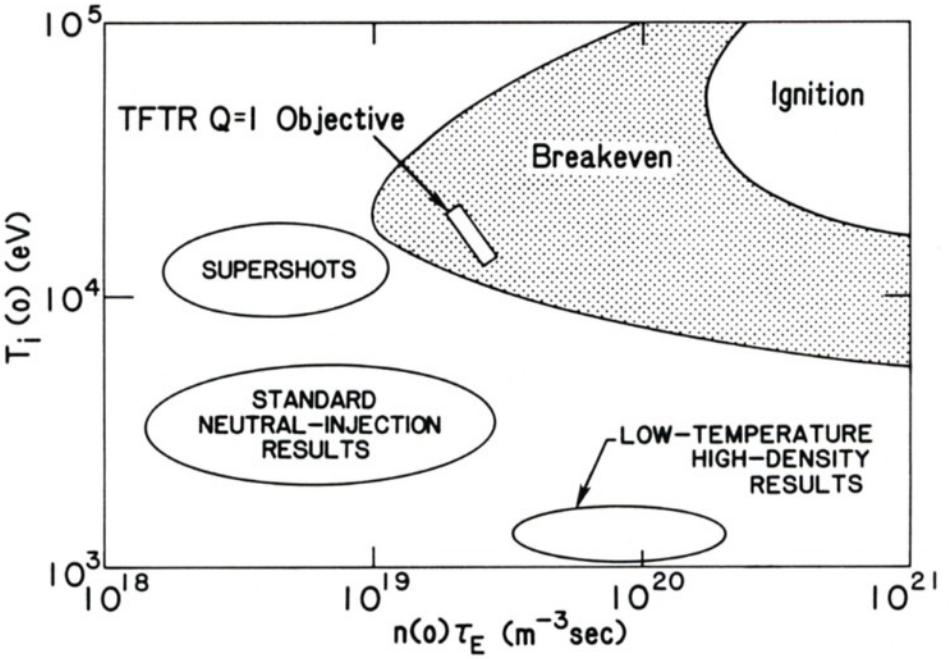
SPRING FORWARD

Daylight savings time begins this weekend. Clocks are officially set forward one hour on Sunday morning, April 5 at 2:00 a.m.

The PPL HOTLINE is issued by the Princeton University Plasma Physics Laboratory, a research facility supported by the United States Department of Energy. Correspondence should be directed to PPPL Information Services, B380, C-Site, James Forrestal Campus, ext. 2754.

HOTLINE
PRINCETON PLASMA PHYSICS LABORATORY
Vol. 8, No. 13 April 8, 1987

TFTR RESUMES EXPERIMENTS WITH LONG-PULSE ION SOURCES



TFTR progress is shown in the diagram above, where ion temperature is plotted against the product of density and confinement time (nτ). The present experimental run is aimed at extending the supershots toward TFTR's Q = 1 objective.

TFTR operations resumed in January after a two-month shutdown to install 11 new ion sources on the neutral-beam heating system. The new long-pulse ion sources operate with 2.0-sec pulses, up from 0.5-sec for the old sources, and with a full-power capability of about 3 MW per source. This should allow the final 12 sources that will be available in the fall of 1987 to comfortably reach the design value of 27 MW. One of the sources has been operated to essentially full parameters on the TFTR test stand.

The major objectives of this run, which will continue until early June, are to extend the supershot regime to better confinement using the long-pulse ions sources, and to use the deuterium pellet injector to enhance confinement in either ohmic-heated or beam-heated plasmas.

Last summer's record temperature results of 20 keV (220

(continued)

What is a Supershot?

The summer of 1986 was notable not only for the Statue of Liberty Centennial celebration and the Mets' World Series victory but also for the attainment of new, record-high temperatures on TFTR and the coining of a name to explain them. "We first started talking about supershots in June of '86," said Rich Hawryluk. "We saw a few pulses that were so clearly distinctive and so far superior to those we had seen previously, that in the control room we gave them the nickname 'supershots'," Hawryluk said. The name continued to be used, and was picked up by many of the science writers and reporters describing the results. "The name irritates some of our colleagues at the other labs," said Hawryluk, "but by now it has taken on a life of its own."

Supershots are low-current, high-density plasma discharges combined with intensive neutral-beam heating (17 MW last summer) that are fired in a machine where the walls have been scrupulously conditioned via high-power discharges to remove adsorbed deuterium. These conditions provide a plasma that is much denser at its center than at its edge. When intensively heated, the plasma enters an "enhanced confinement regime," where the plasma temperatures attained are much higher than previously predicted.

million °C) were done at low plasma currents (1 MA) and rather low plasma densities about 7×10^{13} cm^{-3}). TFTR physicists hope to use the new long-pulse ion sources to run supershots while increasing the plasma current during the 2.0-sec neutral-beam pulse. Furthermore, these new sources are expected to heat higher density plasmas because they operate at higher voltages and have a larger fraction of their power at full voltage.

Last summer, physicists found that supershots work best when the neutral-beam power injected in the same direction as the ion movements (co-injection) and the power injected opposite to the direction of the ion movement (counter-injection) are roughly equal. TFTR presently has three co-injection beamlines and one counter-injection beamline. "We are planning to move one co-beam to a counter position this summer," said TFTR Project Head Dale Meade. "This costs about $3 million to do. Before moving the beamline, TFTR needs to study plasmas at near-balanced conditions using the long-pulse ion sources. Fortunately, the recent incident that disabled beamline #5 (a co-beamline with two sources) should not significantly impact our ability to do the critical heating experiments," he said.

With the new ion sources, a total of about 24 MW of power from the four neutral beams was originally expected. About 15 to 20 MW are now anticipated from the three operable beamlines. "The damaged valve will cause us some operational headaches, but we should be able to achieve the major objectives of the run," Meade said.

Extending the Supershots

A key measure of TFTR performance is referred to as Q. It represents the ratio of fusion energy output to plasma heating power input. Last summer's supershots yielded plasma conditions that would have provided a deuterium-tritium (D-T) equivalent Q value of 0.2 at plasma currents of 1 MA in a deuterium plasma. Because of the limitations of the old neutral-beam ion sources, the pulses were short (0.5 sec) and the average energy of the full-energy beam ions was only 95 keV out of the nominal 120 keV. The new neutral-beam ion sources are designed to overcome these difficulties. A D-T equivalent value of Q between 0.3 and 0.4 could be achieved.

However, to get to Q = 1, TFTR performance must be improved by a factor of three. "What we need to do is to run supershots at a higher plasma current. About 2.5 MA should give us the results we want," said Dale Meade. "It will take some time to learn to run the supershots at that level. For example, should we start at a relative low plasma current and ramp it up during the neutral-beam pulse? Or perhaps the new, better beams will allow a higher current without any additional tricks. All of this will take some time to work out, and this is what we hope to do between now and June."

Pellet-Injection Experiments

Pellet injection is another area that will receive a lot of attention in the upcoming runs. Experiments with pellet injection in 1986 led to an increase in $n\tau$ in ohmically heated plasmas from the previous record of 0.7×10^{14} cm^{-3} sec set by Alcator-C at MIT in 1983 to a world record 1.5×10^{14} cm^{-3} sec. However, when combining pellet injection with neutral-beam injection, physicists found that either the pellets or the beams did not penetrate well to the plasma's center. Meade hopes that during this run, some insight can be gained into why this is so. "More than that, we would like to find a way to have these two techniques work effectively in concert," he said. "In any event, the ICRF (ion cyclotron radio-frequency) heating from PLT that we will add should provide a way around the problem and demonstrate significant heating of a high-density pellet-injected plasma."

Although D-T operation is three years away, significant effort is underway to prepare for this phase of operations. The tritium storage and delivery system is now being tested using deuterium. By the summer of 1988, testing will be underway using 100 Curies (Ci) of tritium. This will be boosted to 1,000 Ci by the summer of 1989, in preparation for the full 50,000-Ci (5 grams) tritium operation in 1990.

During the next six months, PPPL will be doing a preliminary design for the igloo shield that will be installed around the TFTR to absorb the additional high-energy neutrons expected during D-T operation.

Research into techniques for providing tritium fuel in the

(continued)

plasma's center is also underway. Oak Ridge National Laboratory has been funded to design and build a tritium pellet injector that will be tested at the Los Alamos National Laboratory. A tritium pellet injector would be used to produce a well-confined plasma with tritium fueling at its center. Similarly, PPPL is also studying the technical feasibility of using tritium neutral beams to fuel the plasma center with tritium.

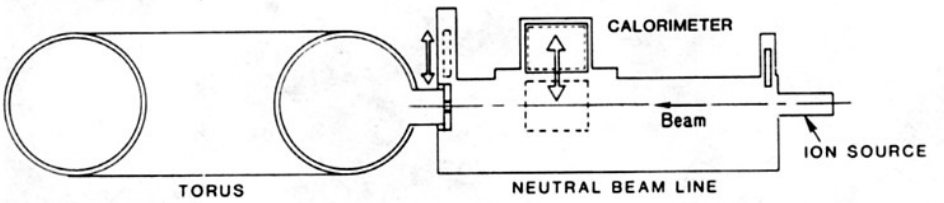
Under the present Laboratory budget, "All of these activities are possible, but just barely," said Meade. "It will require considerable ingenuity and effort on the part of the staff to accomplish all of these goals. We will soon have an indication of what is proposed for PPPL for FY88. That will help us make more detailed plans for next year. Beyond that, all of these plans are subject to fiscal constraints."

In early June, TFTR will enter a scheduled shutdown period to add 4 MW of ICRF heating from PLT. This will be followed by an increase to 7.5 MW in the fall of 1988. During the spring opening, the damaged neutral beamline valve will be replaced, and one beamline will be reoriented to inject counter to the direction of the ion movements. Additional plasma diagnostics will be added to increase physicists' understanding of the plasma, and existing diagnostics will be provided with greater neutron shielding to improve their performance.

This will pave the way for the Q = 1 demonstration in an all-deuterium plasma early in 1988, to be followed by the deuterium-tritium Q = 1 experiments in 1990. TFTR will then be "mothballed," according to Meade, while staff and facilities are concentrated on CIT.

by Diane Carroll

TFTR Neutral Beamline Mishap Damages Valve



A month after beginning the current experimental run, the failure of an interlock system on one of the TFTR neutral-beam injectors resulted in damage to that beamline's isolation valve gate. The mishap was discovered on Friday, February 20 during conditioning of the beamline.

The isolation valve separates the TFTR vacuum vessel from the neutral beamline. The gate is normally open when the beam is fired, allowing the beam to penetrate into the plasma. During conditioning and testing, the valve is normally closed, and the beam is fired into a calorimeter to measure the beam's thermal profile and to protect the valve cover.

On February 20, no readings were received from the calorimeter, so engineers and technicians used video cameras to inspect the beamline. They found the calorimeter out of the beam path, which allowed the beams to reach the isolation valve gate, burning a hole into it.

The damage to the beamline is not expected to significantly affect TFTR experiments planned for this spring (see accompanying article). Initial estimates put repair costs at between $50,000 and $100,000. A team of Engineering Department personnel is investigating the causes of the mishap and will recommend remedial action. In addition, TFTR will be reviewing the entire interlock system as it prepares for future operation.

ORC Status Report

Over 200 Laboratory employees completed the PPPL Social Program's Questionnaire mailed to all staff members in February. The questionnaire was developed by the PPPL Social Committee.

The Committee, which was formed in December as an action item to the ORC Survey, was asked to review the Laboratory's Morale Fund to determine if it is being optimally used to meet the needs of the employees.

The Committee has reviewed the questionnaires and will present their recommendations to management in the very near future.

Equal Opportunity Policy Reaffirmed

The Plasma Physics Laboratory, consistent with the policies of Princeton University, subscribes to a policy of equal opportunity in all aspects of employment. The Laboratory is committed to principles of fairness and respect for all and seeks to reach out as widely as possible in order to attract the ablest individuals to its staff. For these reasons, employment decisions are made on the basis of an individual's qualifications to contribute to attaining the Laboratory's programmatic objectives. In applying this policy, the Laboratory is committed to the principle of nondiscrimination on the basis of personal beliefs or characteristics such as political views, religion, national or ethnic origin, race, color, sex, sexual orientation, age, marital status, veteran status, or disability unrelated to job or program requirements.

In addition to the general policy just defined, the Laboratory has specific legal obligations as a federal contractor. These obligations include the development and implementation of a plan to undertake appropriate forms of affirmative action to employ women, members of minority groups, handicapped individuals, and veterans. An Affirmative Action Plan written in compliance with Executive Order #11246 has been filed with, and approved by, the U.S. Department of Labor's Office of Federal Contract Compliance Programs. This plan is available for review at the University upon request.

The Provost is the University Officer with responsibility for overseeing the implementation of this Equal Opportunity Policy and the Affirmative Action Plan. The Manager for Employment, Personnel Division, is the responsible Equal Opportunity Officer for the Laboratory.

Service Awards

Representing 1,250 years of service to the Laboratory, employees with five, ten, fifteen, and twenty year anniversaries were honored recently at the seventh annual service awards program. Each employee will receive a momento of their choice and an individual photograph taken during the presentation ceremonies. The above photo is of Technical Operations technical staff who were honored for ten years of service.

News Bits

Trentonian Photo By BILL RYAN

***Harold Murphy** (left), an electronics technician in the TFTR Fusion Products Division, and attorney Thomas Sumners, Jr. were quest speakers recently at Trenton Junior High School No. 5. Mr. Murphy was invited to talk with the students about his work at PPPL as part of a month-long program celebrating Black History Month.*

R. Richey Pfeifer was appointed Head of the Plant Engineering Branch in the Plant Maintenance and Engineering Division. Pfeifer joined PPPL in 1984 as a Project Engineering Manager. He replaces Frank Fumia who recently retired.

TRANSITIONS

New Hires

The HOTLINE welcomes the following new employees:

Hans-Stephen Bosch, a Staff Research Physicist in the Research Department.

Steven Cowley, a Staff Research Physicist in the Research Department.

Joseph Greco, a Health Physicist in the Project and Operational Safety Office.

Gary Hill, a Material Handler in the Materiel Control Group.

David Hwang, a Health Physics Technician in the Project and Operational Safety Office.

Karen Ossmann, a Computer Operator in the Computer Division.

Michaela Mole, a Technical Writer in the Computer Division.

Marriages

The HOTLINE offers its congratulations to **Ed Murfit** of Public Safety, Forrestal Campus, and his new wife Viviann who were married February 14.

Births

The HOTLINE offers its congratulations to the following employees, who recently became proud parents:

Tom Holoman of Diagnostic Neutral Beams and his wife, Beverly, whose daughter, Lisa, was born March 7.

Jill Barszcz of the Computer Division and her husband, Mike, whose daughter, Jessica Lynn, was born March 16.

Retirees

The HOTLINE wishes the best to the following recent PPPL retirees:

Fred Kloiber after twelve years of service. Fred was a Project Engineer in the Rectifier Section of the Engineering Department

Kenneth LeBon after ten years of service. Ken was a draftsman in the Mechanical Drafting Section of the Engineering Department.

(continued)

Robert Sathre after eleven years of service. Robert was a Technical Associate in the Vacuum Branch of the Engineering Department.

Joseph Sherlock after thirty-one years of service. Joseph was a Technical Associate in the Mechanical Engineering Section of the Engineering Department.

NEW LOCATION

The QA Division has moved to the new trailers located above to the right of the safety building. Telephone extensions will remain the same.

Correction

The recent HOTLINE article on consolidation efforts at PPPL contained an error. In Table 2 under New Building, the milestone date for "Establish Space Requirements" is November 1986 not November 1987.

The PPL HOTLINE is issued by the Princeton University Plasma Physics Laboratory, a research facility supported by the United States Department of Energy. Correspondence should be directed to PPPL Information Services, B380, C-Site, James Forrestal Campus, ext. 2754.

Disposal Procedures for Hazardous Material

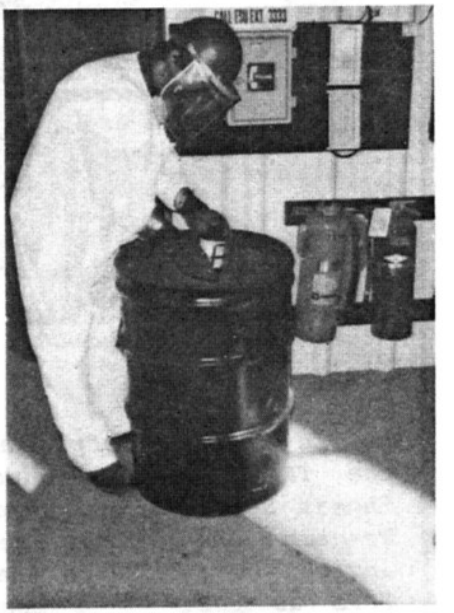
Employees are responsible for seeing that hazardous materials (HazMat) are disposed of correctly. HazMat should never be dumped down sinks, tossed in trash cans or dumpsters, or left lying around. Below are the correct procedures to be followed when disposing of HazMat:

- Departments using HazMat must have Material Safety Data Sheets (MSDS) on hand for all HazMat used in a PPPL work area.

- All HazMat requesters will complete a three-part Hazardous Waste ID Card, available at the C-Site stockroom. After filling in all the necessary information on the Hazardous Waste ID Card, the top copy should be sent to Materiel Control with all applicable MSDS sheets. The second copy should be sent to Occupational Medicine and Safety (OM&S). The third copy (card) should be attached to the material to be disposed of.

- Upon receipt of any Hazardous Waste ID Cards with MSDS information, Materiel Control will pick up the material as promptly as possible -- usually within ten working days. The OM&S Office (ext. 3372) should be advised of any materials requiring immediate action due to imminent danger. Arrangements will be made for prompt removal of the material.

- If the requester does not have the MSDS sheets, or does not know the identity of the material, the requester should contact the OM&S Office. The needed information will be obtained -- either by checking OM&S files, by contacting the manufacturer, or by arranging for an analysis. Once this information is available, Materiel Control will promptly pick up the material.



HazMat Section employee packs hazardous waste for disposal.

- If requesters find it necessary to remove the material from a work site prior to scheduled pickup by Materiel Control or prior to the availability of MSDS data, they will be allowed to move the material themselves to a "quarantine" area set up by Materiel Control. Each requester must make prior arrangements with the Hazardous Materials Section of Materiel Control (Scott Larson, ext. 3387) for receipt and storage of the material.

- In all cases, the requester is responsible for having the material in a container

(continued)

suitable for transportation to Materiel Control and to ensure that items in the work area are stored properly prior to removal for disposal.

In order to assure expeditious handling and follow-up of disposal actions, Materiel Control will present a status report of pending actions at the Laboratory's monthly safety meetings.

Any questions or problems relating to the disposal of HazMat should be referred to Scott Larson in the Hazardous Materials Section of Materiel Control, ext. 3387.

Falls

The ways to prevent accidents due to falling are well known to most everyone. The reasons for falls are perhaps less obvious. Below is a short summary of these reasons. Take the time to read them.

Falls happen because of unsafe conditions: breaks in flooring, slippery spots, makeshift platforms, unlighted walkways and stairwells, tools and equipment scattered in aisles, cords and piping stretched across pathways.

Falls happen because of unsafe acts: running in aisles, hurrying on stairs, failing to use handrails, climbing on improvised supports, overreaching in high places, tilting far back in chairs, leaving obstacles in the way of walkers.

Falls happen because of combinations of unsafe conditions and acts: Racing down stairs made slippery by spills, climbing on boxes or crates in darkened areas, leaning misfit ladders against shaky supports.

Serious injuries can result from accidents due to falls. Being aware of the situations that cause falls could save you or your friends much pain and suffering.

Meeting Calendar

April 1987

06-08 **Annual Controlled Fusion Theory Conference** (Sherwood Meeting), San Diego, California. Contact: Don Dobrott, SAIC, P.O. Box 2351, La Jolla, CA 92038.

08-09 **Fusion Power Associates' Annual Meeting and Symposium on Applications of Laser, Particle Beam, and RF Power Technologies,** Pleasanton, California. Contact: Ruth Watkins, FPA, 2 Professional Dr., Ste. 248, Gaithersburg, MD 20780. 301-258-0545.

14-16 **14th Annual Energy Technology Conference and Exposition,** Washington, D.C. Contact: Karen Noyes, Government Institutes, Inc., 966 Hungerford Dr., No. 24, Rockville, MD 20850. 301-251-9250.

26-30 **Symposium on Fabrication and Properties of Lithium Ceramics** (To be held during the 89th Annual Meeting of the American Ceramic Society), Pittsburgh, Pennsylvania. Major emphasis will be on issues involved in the application of lithium ceramics to fusion reactor blankets. Contact: Glenn Hollenberg, Westinghouse Corp., Hanford, WA. 509-376-5515.

27 Apr-01 May **OSA/IEEE Conference on Lasers and Electro-Optics** (CLEO '87), Baltimore, Maryland. Contact: Optical Society of America, 1816 Jefferson Pl., N.W., Washington, DC 20036. 202-223-8130.

More comprehensive meeting listings may be found in Nuclear Fusion, Physics Today, IEEE Spectrum, and Communications of the ACM.

Safety Training Courses

The Occupational Medicine and Safety Office has scheduled the following safety training courses for April:

Course	Date/Time/Location
Lockout/Tagout Procedures	16 April, 1:30-3:00, Safety Training Trailer
Forklift Training	21 April, 8:30-12:00, Safety Training Trailer
Confined Space Entry	23 April, 8:30-11:00, Theory Conference Room
Proper Use of Fire Extinguishers	28 April, 9:00-10:00, Safety Training Trailer
Radiation Safety Training	29-30 April and 1 May, 8:30-12:00 each day Theory Conference Room

Employees must obtain permission from their immediate supervisor to attend these classes. Supervisors should call Mary Ann McBride at ext. 3468 to enroll their employees.

Basic Safety Orientation for new employees is offered every Monday beginning at 8:30 a.m. in the Safety Training Trailer.

Holiday Schedule

The official 1987-1988 Princeton University Holiday Schedule is given below:

Independence Day	03 July	Friday
Labor Day	07 September	Monday
Thanksgiving	26 November	Thursday
	27 November	Friday
Christmas	24 December	Thursday
	25 December	Friday
New Year's	31 December	Thursday
	01 January	Friday
Memorial	30 May	Monday
Optional Holidays		Two Additional

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

Alternate holiday arrangements may be made by Departments and Offices such as the Library and Food Services where work schedules or union contracts dictate other holiday schedules.

HOTLINE
PRINCETON PLASMA PHYSICS LABORATORY
Vol. 8, No. 14 April 22, 1987

ASSISTANCE AVAILABLE FOR EMPLOYEES WITH BENEFITS CLAIMS AND QUESTIONS

Individual assistance for employees completing medical benefit forms, submitting claims to Aetna, as well as responding to employee concerns or questions relating to insurance and related benefits has been initiated by the Personnel Department.

According to Steve Iverson, Personnel Director, the expanded assistance is provided to help employees most effectively utilize the various insurance options available from the University.

"We have become increasingly aware that many employees are having difficulties in filing insurance claims and in understanding the various options available to them," Iverson said. "Beginning immediately, Eleanor Schmitt, PPPL Benefits Coordinator, will be available to work with employees on an individual basis completing and submitting insurance claims and responding to questions or concerns that relate to the Insurance and Medical Plans offered to Laboratory employees," he added.

Employees wishing assistance should arrange an appointment with Eleanor Schmitt by phoning ext. 2046. Appointments will be scheduled during normal office hours.

Eleanor Schmitt, PPPL Benefits Coordinator, counsels John Nicol.

It's definite! PPPL Family and Community Day will be on Saturday, May 2, rain or shine.

Plan to bring your family and friends and show off where you work. Displays on the Laboratory program, self-guided tours of TFTR, PLT, PBX, and S-1, refreshments, and souvenirs are planned.

Diane Carroll is coordinating the arrangements. She can be reached at ext. 2751.

ORC Task Force Expanded

Six nonsupervisory employees have been named members of the ORC Follow-Up Task Force, expanding the group to 14 members. The new participants are drawn from each of the Laboratory's staff classifications as follows:

Dolores Bergmann - Office and Clerical

Janardhan Manickam - Research

Harold Murphy - Lab and Shop

Michael Viola - Engineering and Scientific

Bill Walker - Senior Lab and Shop

Arlene White - Administrative

In early April, employees were asked through the HOTLINE to volunteer by completing a nomination form and returning it to Jim Clark, Chairman of the Follow-Up Task Force. The six new members were recommended by the Task Force members from the list of volunteers and appointed by the Director. The expanded Task Force will remain in operation for at least one year to help implement a series of approved laboratory-wide actions aimed at improving the quality of work-life at PPPL. The Task Force is developing new programs and activities to enhance staff capabilities and strengthen Laboratory performance.

Contributions Sought for Woolsey Children

PPPL employee John Woolsey and his wife Kathleen died tragically on March 27. They are survived by their four children: Gregory 2, Joseph 5, Kristen 8, and John 10.

The Hamilton Fire Company has established a trust fund to help provide for the Woolsey Children. PPPL employees who would like to contribute to the fund should contact Bobbie Cruser, ext. 2101, or their area fund coordinator from the following list. Checks should be made payable to the J. Woolsey Children's Fund and forwarded before April 30.

M. Brown	LOB 3rd Floor	Ext.	3045
C. Bushnell	CIT		3038
B. Cruser	Personnel		2101
A. DeMeo, Jr.	Info. & Admin. Serv.		2755
W. Dorn	Safety		3525
J. Faunce	S-1		3712
G. Gettelfinger	TFTR		3519
E. Gilsenan	Maintenance		2887
J. Hengeli	Vacuum Shop		3031
E. Hill	Neutral Beam		2784 or 2692
S. Holcombe	Warehouse		2328
S. Monaghan	IRM		3531
J. Mount	C-Site Machine Shop		3144
D. Olivieri	Procurement		2436
E. Perry	Tech Shop		3016
W. Persely	MG Group		3078
J. Rushinski	Drafting		2095
J. Savino	TFTR LOB 3rd Floor		2292
L. Schaufler	ME Division		3006
J. Semler	PBX		3176 or 2865
D. Simmonds	Computer Div.		2216
C. Springer	Accounting		3506
G. Tompkins	ESU		3166
J. Wood	Coil Shop		3039

Obituary

Henry M. Chandler, Jr.

Henry M. Chandler, Jr., 65, died in the Medical Center at Princeton on March 27 after a short illness.

Born in Middletown, Connecticut, Henry graduated cum laude from the Hill School, Pottstown, Pennsylvania in 1938. He received his bachelor of science degree from Princeton University in 1942 and his masters degree in 1947, after returning from active duty during World War II. From 1949 to 1951, he did post graduate work at the University of Pennsylvania.

Henry was a member of the Electrical Engineering Department faculty at Princeton University from 1942 until 1959. During this period he co-authored a college textbook entitled "Introductory Electrical Engineering," with the late C.H. Willis.

Henry joined the Project Research Staff of Project Matterhorn in 1959. He was an electrical power engineer and played an important role in suppling numerous research devices with high-energy from large motor generators (MG).

Henry worked closely with the Allis-Chalmers team installing and bringing into operation the Model-C Stellarator's group of three motor-generator sets, which provided 200 MW of three-second pulsed dc power from 12 separate generators. He took particular pride in achieving a far better-than-average balancing of these three massive MG rotors, eventually reducing the maximum amplitude to less than one-thousandth of an inch.

These MG sets have been used to supply power for several other experimental devices over the years, including the FM-1, ATC, PLT, PDX, PBX, and S-1. Motor generator power is critical to these experiments, and Henry was a key person. He was noted for being on the job all hours of the day and night throughout his career at PPPL.

Henry was also a pioneer in computer programming, going back to his time in the navy and continuing at the Lab. He gave several computer courses while in the naval reserve. He wrote programs that contributed to MG operations, work, scheduling, and cable documentation.

At the time of his death, Henry was head of the motor generator section of the Electronic and Electrical Engineering Division.

During World War II, Henry was on active duty as a Naval Reserve Electronics Officer. He was a member of the Navy League and the Retired Officers Association. He retired from the U.S. Naval Reserve in 1986 with the Rank of Captain.

Henry was a member of the Institute of Electrical and Electronic Engineers, the American Society of American Engineering Education, and the National Society of Professional Engineers.

Henry is survived by a niece, Diana Kenner, and a nephew, Stephen Dilworth.

A memorial service was held at the Princeton University Chapel April 2. Memorial contributions may be made to either the Hill School in Pottstown, Pennsylvania or to the Princeton University Class of 1942.

Obituary

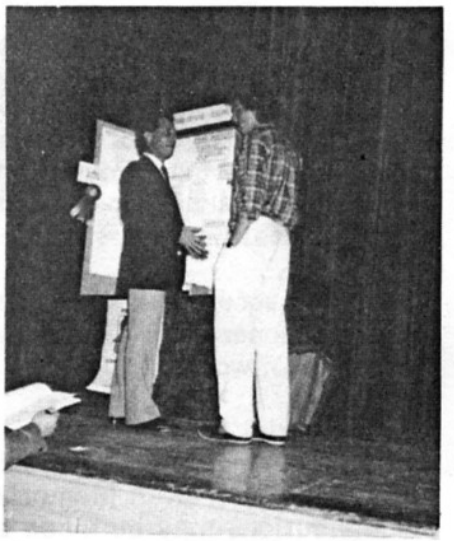
Maria Ivers Williams, wife of Charles H. Williams, died in Clearwater, Florida in January.

Maria was a photographer in the Princeton University Physics Department. She took high-speed photographs of ballistic projectiles in flight.

Maria is survived by her husband, Charles, who was a buyer with PPPL for 34 years. He retired in 1979.

The PPL HOTLINE is issued by the Princeton University Plasma Physics Laboratory, a research facility supported by the United States Department of Energy. Correspondence should be directed to PPPL Information Services, B380, C-Site, James Forrestal Campus, ext. 2754.

NEWS BITS



Barry D. Gould (left), Chairman of the 1987 Greater Trenton Science Fair, and Grand Prize winner Brian Brown.

Brian Brown, son of PPPL employee Mary Ann Brown, won the grand prize at the 35th Greater Trenton Science Fair. His entry, entitled "Liquid Crystal Electro-Optics," also walked off with three other top honors at the Fair: First place in the Senior Physical Division, the United States Air Force Most Outstanding Award, and the U.S. Navy Science Award for Distinguished Achievement.

As Grand Prize winner, Brian receives an all-expense-paid trip to San Juan, Puerto Rico to compete in the International Science and Engineering Fair to be held May 10-16.

A senior at Notre Dame High School, Brian will celebrate his 18th birthday next month. Brian plans to pursue a career in engineering, following in both his father's, Martin, and his brother's, Mark, footsteps.

Kenneth E. Wakefield, a former PPPL employee, will be honored by Saint Mary's College, Winona, Minnesota with the Distinguished Alumnus Award. This award is given to alumni in recognition for outstanding achievements in their chosen profession. Ken, who graduated from Saint Mary's in 1942, will receive the award during Homecoming ceremonies in June.

Ken began his career at PPPL in 1958 as head of the Field Design Section in the Engineering and Development Division of Project Matterhorn. In 1973 he organized and headed the Fabrication, Operations, and Maintenance Division (FOM). When PPPL received authorization to build TFTR in 1975, he was given responsibility for directing all PPPL engineering on the project. In 1983 he became Chief Engineer for PPPL. Ken retired in 1985.

CREDIT UNION

On January 1, 1987, the Princeton University Employees Federal Credit Union implemented a new, variable dividend rate for it prime share accounts and its share draft accounts. Approved by the Credit Union Board of Directors, it is believed that the new rate will encourage thrift and reinforce the incentive to save. The new rates, listed below, apply equally to prime share accounts and to share draft accounts.

Account Balance (in $)	Dividend Rate
5 to 100	5.00%
101 to 500	5.25%
501 to 1,000	5.50%
1,001 to 2,000	5.75%
2,001 to 5,000	6.00%
5,001 to 10,000	6.25%
10,001 to 20,000	6.50%
above 20,000	6.75%

No dividend will be paid if an account balance drops below the required minimum. The fixed rate of 7.00% will continue on all IRA payroll accounts.

Dotty Kerr Practices a Special Kind of Magic

Dotty Kerr and birthday cake she decorated for members of the Princeton Area Office.

What started out as a hobby and a way to do something special for her children's birthdays has turned into a "second career" for Dotty Kerr. Dotty is secretary to Milt Johnson, Acting Area Manager for the DOE Princeton Area Office.

Dotty enjoys seeing the happy and amazed expressions on her friends and customers faces when she presents them with one of her hand-decorated cakes. This is her main reward for the many hours she spends planning, baking, and decorating the scores of cakes she creates each year.

"Coming up with an idea can be difficult," she says. While some of her ideas come from books, she gets most of her them from the people or occasion for which she is making the cake. "They give me an idea of what they want, and then I try and reproduce it in cake form. I really don't know how I do it. I can't draw, but I can decorate a cake and," she adds, "the only formal training I have had is a six-week course in 1977."

The largest cake Dotty has baked and decorated was a wedding cake which served 250. "Wedding cakes take the most work. I have done five of them so far," she remarked.

Dotty bakes some of the larger cakes over several nights and freezes them until she needs them, but she does all the decorating at one setting. A simple cake can be decorated in as little as 10 to 30 minutes; a more detailed cake takes one to two hours or longer.

Miss Piggy

Dotty doesn't have a "most favorite" cake, but one of her most memorable was the one she did when her daughter, Karen, turned 17 and passed her driving test. "It was a simple sheet cake, but it was decorated in minute detail as a New Jersey driver's license," she remembers. Another favorite was the "Miss Piggy" cake she did as a special request.

In addition to cake decorating, Dotty also enjoys making jelly, canning, needlework and bowling. She has been a first-place winner at the Middlesex County Fair over the past several years for both cake decorating (1982) and jelly making (1982, 1983, 1984, and 1986). Her bowling team, the Gutter Dusters, won the 1985-1986 Princeton University Mixed League Championship.

Dotty lives with her husband, Kenny, three horses, one dog, and several chickens in South Brunswick Township. She has two grown daughters, Karen and Dawn, and two granddaughters, Rachael and Jacqueline -- another generation of small ones to delight with her very special kind of magic.

TRANSITIONS

The HOTLINE offers its congratulations to the following employees, who recently became proud parents:

Marriage

The HOTLINE offers its congratulations to **Marilee Thompson** of the Computer Division and **Jim Bialek** of the Engineering Analysis Division, who where married on April 1.

Births

Sandra Weiner of the Information Resource Management Division and her husband, Stuart, whose son, Jeffrey Mark, was born April 3.

Free to good home. Grey and white tabby, male cat. Approximately 1-1/2 years old. If interested call Kathy Dunn, ext. 3391.

Professional Secretaries Week

PPPL secretaries will be celebrating Professional Secretaries Week with a luncheon at Scanticon-Princeton on April 29. The Secretarial and Office Support Staff Organization (SOSSO) is organizing, hosting, and providing door prizes for this event.

Professional Secretaries Week was first celebrated in 1952. It was the brainchild of Mary Barrett, 1952 National Secretaries Association President, and C. King Woodbridge, President of Dictaphone Corporation. The original purpose was to recognize the American secretary and to call attention to the tremendous potential of the secretarial career.

In 1955, the last full week in April was established as the annual date for recognition. Professional Secretaries Day is celebrated on Wednesday of that week.

Official recognition of the week has grown over the years. Today, the week is acknowledged by the President of the United States, the Prime Minister of Canada, many state, provincial, county, and municipal governments, as well as the private business sector.

"Creating Our Future," is the theme for 1987. It was chosen to emphasize that secretaries worldwide must take control of their own destinies and work to shape their own roles in the automated office.

April 20-26 is Professional Secretaries Week. Take the time to acknowledge your secretary's good work and to show your appreciation.

PPPL observes Professional Secretaries' Day in years past.

PPPL HOTLINE
PRINCETON PLASMA PHYSICS LABORATORY

Vol. 8, No. 15 May 8, 1987

PPPL OPEN HOUSE DRAWS 2,200

Nearly 2,200 employees, their families and friends, and interested members of the community took the opportunity to visit the Laboratory during PPPL's Family and Community Day Open House on Saturday, May 2.

For five hours, adults and children wandered through the Laboratory viewing slide presentations, taking part in live demonstrations, talking with employees about their research, looking at displays, and touring the TFTR, PLT, PBX-M, and S-1. Many rode the red, double-decker bus which circled C- and D-Sites giving the visitors an overall view of the facility.

"Just right" and "Very interesting" were the comments most often heard by employee participants Sally Connell and Glenn Pearson. Bob Soltmann felt that PPPL neighbors were very appreciative of the Laboratory for opening its doors to the community. "I saw one man take the time to find out who Harold Furth was and then seek him out and thank him personally," he said.

Refreshments prepared and served by PPPL volunteers were available in the courtyard. Eileen Rabiger thought "It was great fun to see Harold Furth, Don Grove, Jim Clark, and others cooking the hot dogs." A personal taste test by Marjorie Barnett confirmed that "The hot dogs were nice and juicy, full of salt and calories, and oh so good."

In all, Harold Furth and his group of PPPL chefs cooked over 1,600 hot dogs and distributed 1,800 cans of soda. Over 60 gallons of coffee and juice and 134 dozen doughnuts were also consumed.

Rounding out the day's activities, souvenirs were provided for everyone. Nearly 2,000 red, white, and blue baseball

(continued)

We would like to thank everyone who helped make Family and Community Day a big success. An event of this magnitude simply cannot take place without the help and cooperation of everyone -- planners, organizers, and workers. We wanted to help our families, friends, and the community understand a little better what the Princeton Plasma Physics Laboratory is all about. We think we accomplished our goal. Thank you. Diane Carroll Barbara Sarfaty

caps with "Princeton Plasma Physics Laboratory" printed on the front and 800 helium-filled, silver balloons were given out.

Sally Connell who helped blow up balloons said, "We had lots of fun watching the expressions on the children's faces as we blew up the balloons. Everytime we would blow up a balloon, the kids would get so startled by the noise the tanks made. We had lots of kids standing with their hands over their ears. And, of course, every once in a while one of the balloons would pop and the kids would jump and squeal." She added, "Bill Johnson should really work on his knot-tying skills for next time. He was great at filling the balloons but he couldn't knot the string!"

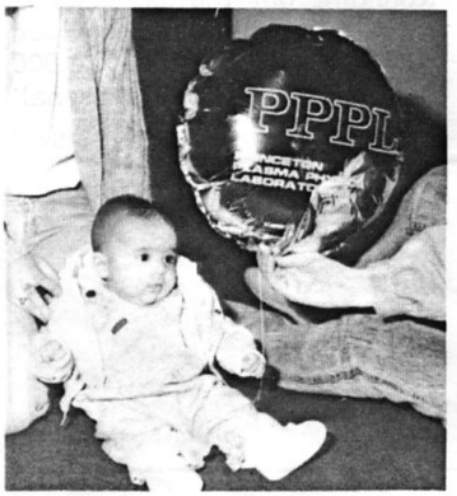
Many Laboratory employees helped with preparations and volunteered their time as workers during the open house. "Enormous effort coupled with enthusiasm and good cheer from everyone involved -- plant maintenance, janitorial services, the carpentry shop, graphic arts, the technicians, security, emergency services, the engineers and research staff members who did posters and acted as guides, the coordinating committee, and the volunteer workers -- made the day a special event," said Jim Clark. "This was an ideal group to work with," added Diane Carroll who coordinated the arrangements. "Everyone was helpful, cooperative, and worked very hard," said co-coordinator Barbara Sarfaty.

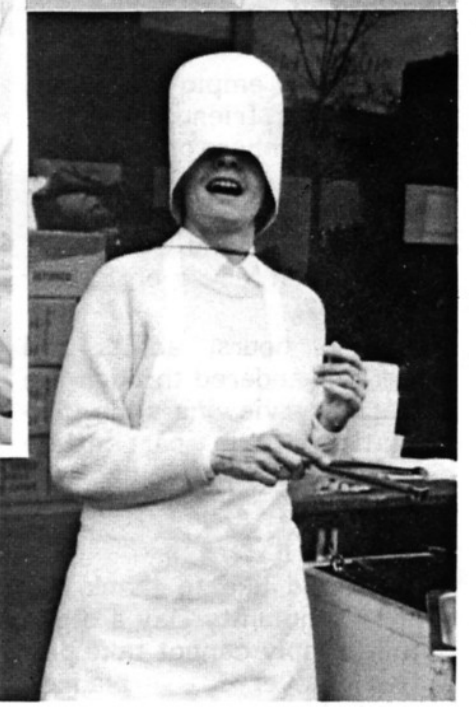
Family Day Taped

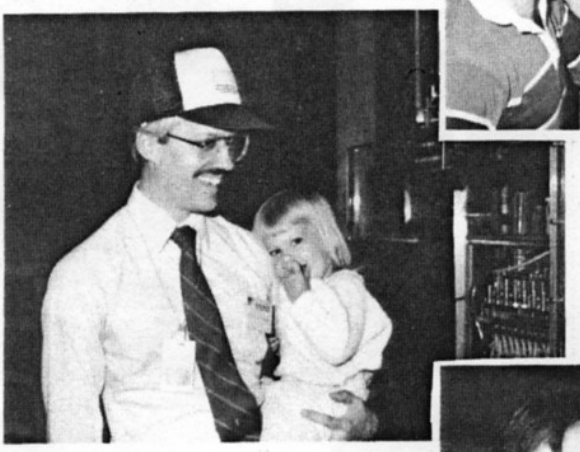
Video tapes were made during the Family and Community Day Open House hosted by the Laboratory on May 2. They consist of unedited candid sequences of the day's activities.

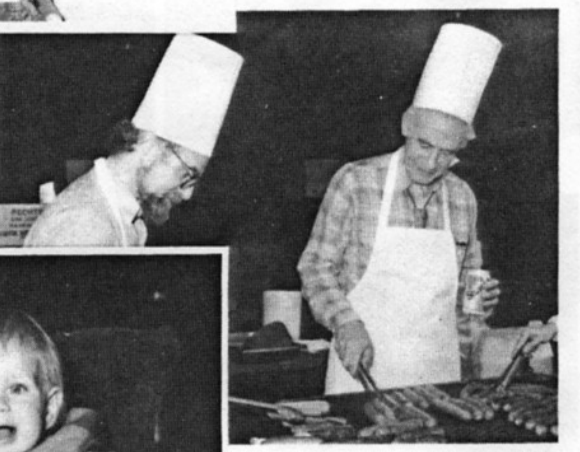
Two complete showings of the tapes are scheduled for Monday, May 11 at 11:30 a.m. and 12:15 p.m. in the MBG Auditorium.

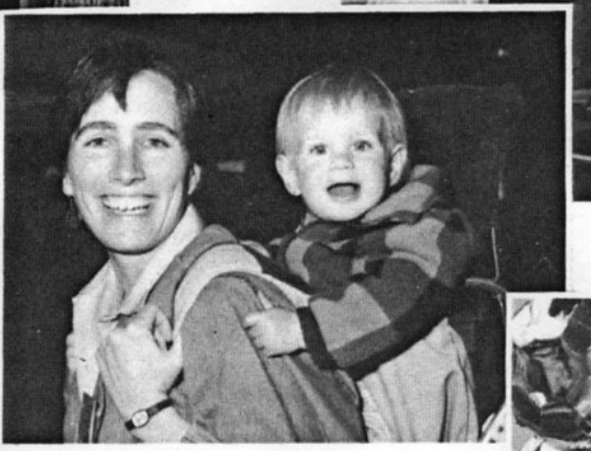
Beginning May 14, one-half inch, VHS tapes may be borrowed from the PPPL Photo Lab (2090) for home viewing.

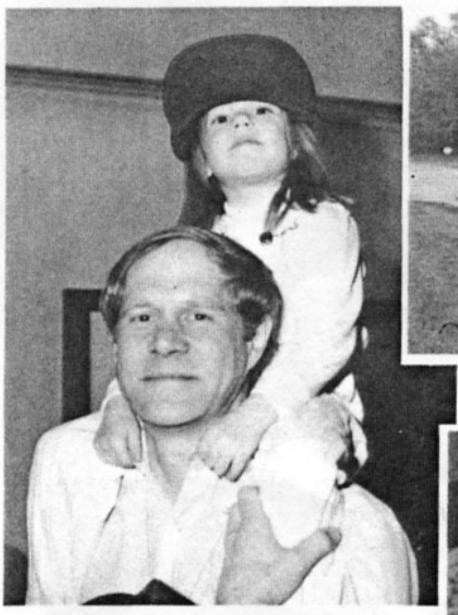


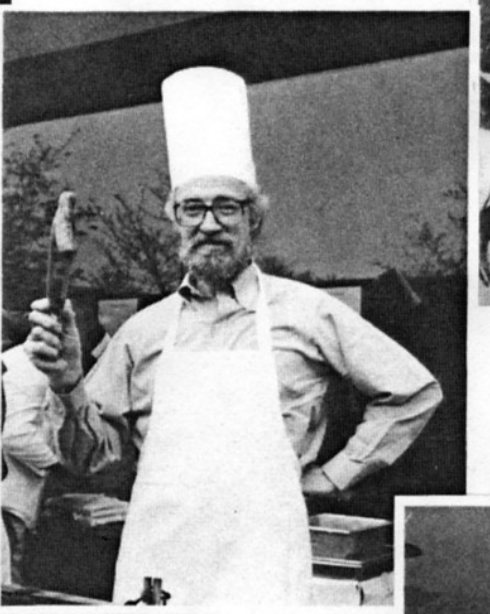


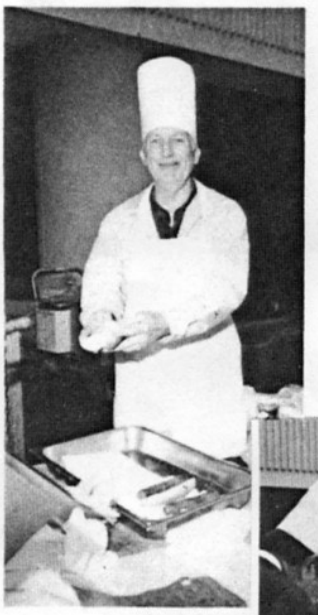












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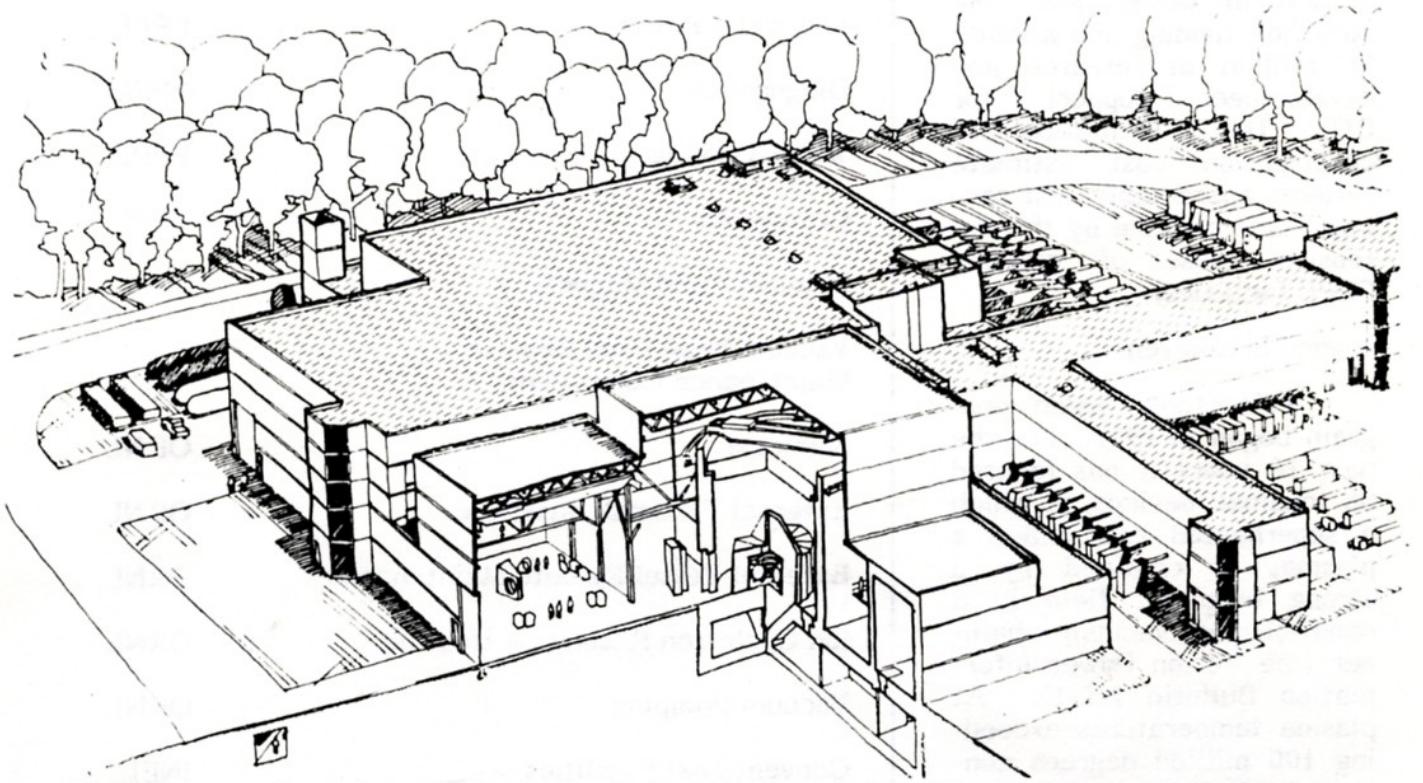
PPPL
PRINCETON PLASMA PHYSICS LABORATORY
HOTLINE

SPECIAL EDITION MAY 1987

PRESIDENT PROPOSES CIT AT PRINCETON



The Compact Ignition Tokamak is being designed to fit readily within PPPL's existing TFTR facility, resulting in substantial cost savings in power supplies, computers and other support systems.

President Reagan's 1988 budget, which was submitted to Congress on January 5, proposes initial funding for the design and construction of a Compact Ignition Tokamak (CIT) at the Princeton Plasma Physics Laboratory (PPPL). In June, 1986, a national design team, led by PPPL, proposed that the $357 million CIT device should be the next step in the development of magnetic fusion energy as an inexhaustible, safe and environmentally acceptable means of generating electricity. This project, if approved by Congress, and funded according to the proposed schedule, would begin operation in 1993.

"We are encouraged by the strong leadership of Secretary Herrington and the Department of Energy in moving forward with this important CIT project" noted Princeton University President William Bowen, "and we are very pleased that Princeton will be the site of the new device. We appreciate the excellent work of the CIT national design team, and we look forward to working together to bring the CIT into operation as soon as possible."

In addition to PPPL, the CIT national design team includes scientists and engi-

(continued)

neers from Massachusetts Institute of Technology, Oak Ridge National Laboratory, Los Alamos National Laboratory, Idaho National Engineering Laboratory, and Lawrence Livermore National Laboratory.

The Administration's 1988 budget calls for $8 million in design and construction funding and another $8 million in research and development support for CIT. The $357 million CIT construction cost estimate reflects appreciable cost savings made possible by the extensive reuse of existing PPPL facilities.

Beyond Breakeven

Princeton's fusion program began in 1951. For the past 16 years it has focused on tokamak devices, in which a superheated gas, called a plasma, is confined by a strong magnetic field in a donut-shaped vacuum chamber (see Fusion Power Information Bulletin NT-1). At plasma temperatures exceeding 100 million degrees centigrade, fusion reactions convert mass to energy, providing a potential source of useful power for generating electricity.

The Tokamak Fusion Test Reactor (TFTR), currently operating at PPPL, has as its primary mission the attainment of "scientific breakeven", where the total fusion power equals the auxiliary heating power required to maintain the plasma near 100 million °C. CIT will go a step further. It will be capable of producing an ignited plasma in which enough fusion power is produced to sustain the 100 million °C temperature without the aid of auxiliary heating. Although considerably smaller than TFTR, CIT is expected to generate about ten times the fusion power, thanks to improvements in confinement techniques.

FUSION LABORATORY RESPONSIBILITY FOR CIT ELEMENTS

CIT Element	Responsible Laboratory
Management	PPPL
Toroidal Field Magnets & Structure	PPPL
Electrical Power	PPPL
Diagnostics	PPPL
Water Cooling	PPPL
Cryogenics	PPPL
Poloidal Field Magnets	MIT
Vacuum Vessel and Remote Maintenance Components	IS
Shielding	ORNL
External Tokamak Structure	ORNL
External Vessel Remote Maintenance	ORNL
Ion Cyclotron Resonance Heating	ORNL
Vacuum Pumping	ORNL
Conventional Facilities	INEL
Instrumentation and Control	LLNL/PPPL
Cleaning, Disposal, and Monitoring	LANL
Fueling	LANL

ORNL = Oak Ridge National Laboratory
MIT = Massachusetts Institute of Technology
LLNL = Lawrence Livermore National Laboratory
LANL = Los Alamos National Laboratory
INEL = Idaho National Engineering Laboratory
IS = Industrial Subcontractor to be selected

Both TFTR and CIT are designed to use small quantities of plasma fuel consisting of a mixture of deuterium and tritium, the fuel likely to be

(continued)

used in the first commercial fusion reactors. In deuterium-tritium (D-T) reactions, 20% of the fusion energy produced is in the form of alpha particle kinetic energy. Since they are charged, the alphas remain trapped in the magnetic field of the tokamak and through collisions transfer their energy to the plasma, heating it. At ignition, alpha particle heating alone is sufficient to sustain the 100 million °C plasma temperature.

An ignited plasma is analogous to a conventional fire. Initially, some energy must be input to the fuel to start the fire. However, once ignition occurs, the fire is self-sustaining as long as fuel is available. The initial energy input to a CIT plasma "fire" will come from ohmic (resistive) heating, as in any tokamak, and to a much larger extent from auxiliary heating from injected radio frequency waves.

CIT will be capable of providing a 4-second plasma burn, long enough for physicists to study alpha particle heating and plasma characteristics in the range required for future power plants.

As the world's first ignited fusion experiment, CIT will help to maintain U.S. technological leadership in the fusion energy field. It will serve as a cost-effective bridge between the experimental operation of the current generation of major tokamaks in the U.S., Europe, Japan, and the U.S.S.R. and the construction, probably on an international basis, of a large-scale Engineering Test Reactor (ETR) to be operated at a new site about the year 2000. ETR would take advantage of physics knowledge gained on CIT coupled with advanced engineering and materials development, allowing sustained ignition and a demonstration of the actual conversion of fusion energy to heat and then to electricity.

PRINCIPAL CIT PLASMA/MACHINE PARAMETERS

Average Operating Temperature	10 keV (100 million °C)
Plasma Density (Volume Averaged)	$\leq 6.5 \times 10^{14} cm^{-3}$
Energy Confinement time (Minimum for Ignition)	0.3-0.5 sec
Plasma Current	10.0 MA
Pulse Length	4.0 sec
ICRH Power (Initial)	10 MW
ICRH Power (Full)	20 MW
Toroidal Field Strength	10.4 Tesla
Number of Full Field Pulses	3000
Number of 70% Field Pulses	50,000
Major Radius	1.60 m
Minor Plasma Radius	.51 m
Fusion Power	300 MW
Alpha Heating Power	60 MW

CIT Physics

Simply stated, the mission of CIT is to demonstrate plasma ignition at relatively

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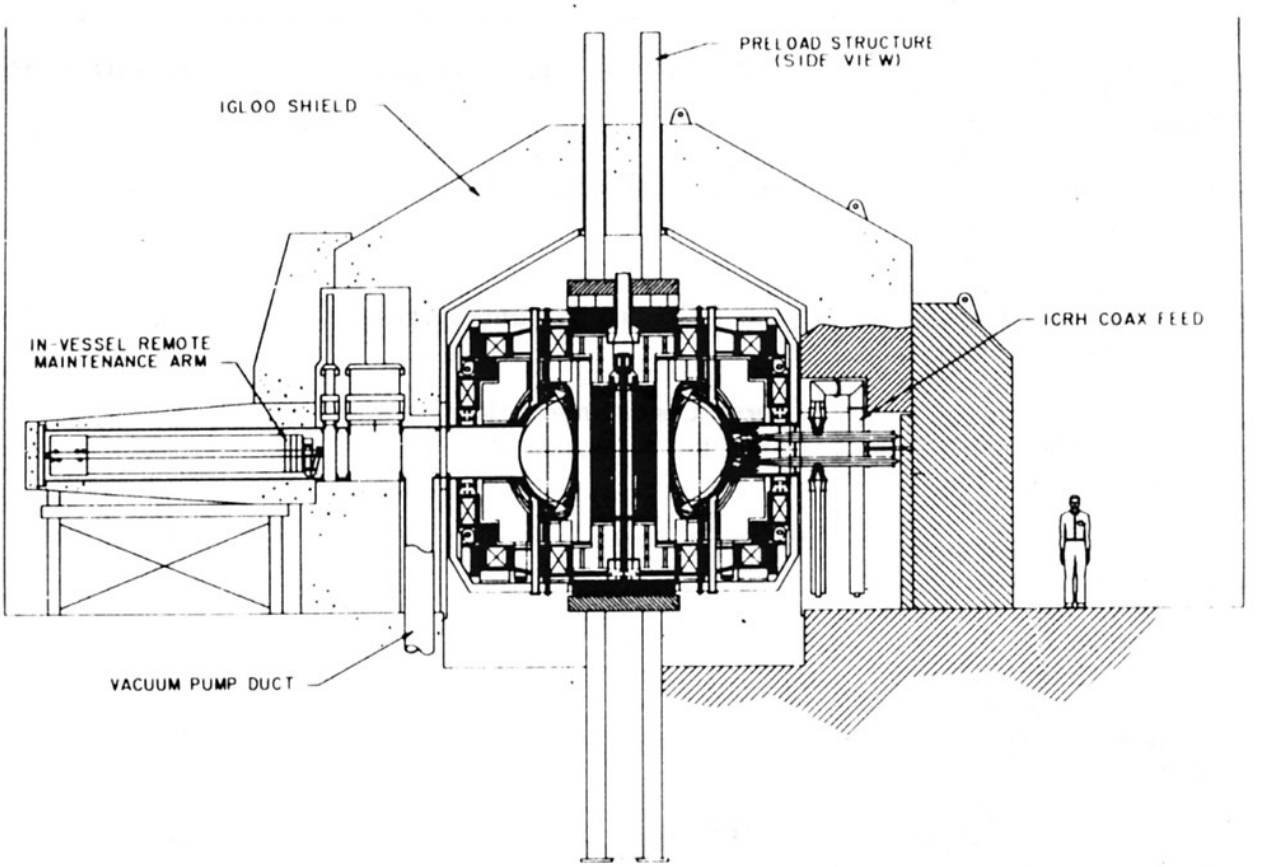


CIT Side Elevation View
Conceptual Design

low project cost with realizable engineering technology. This goal leads to the design of a compact device with strong magnetic fields, high plasma current and high fusion power densities.

To reach ignition CIT must attain $n\tau$ values of at least 3×10^{14} cm^{-3} sec, a factor of ten greater than required for breakeven on TFTR. This will be realized utilizing a magnetic field of 10 tesla (twice that of TFTR) to produce high density plasmas, $n \geq 6 \times 10^{14} cm^{-3}$. Higher density allows operation with correspondingly lower energy confinement time. Values as low as 0.3-0.4 second are all that will be needed on CIT for ignition at temperatures exceeding 100 million °C.

To reach these temperatures, ohmic heating must be supplemented. Initially CIT will be equipped with 10 MW of auxiliary plasma heating, most likely in the form of ion cyclotron radio frequency (ICRF) heating. ICRF is currently the most advanced method of rf plasma heating. The progress of other rf techniques, including lower hybrid and electron cyclotron resonance heating (ECRH), will be monitored for possible use on CIT.

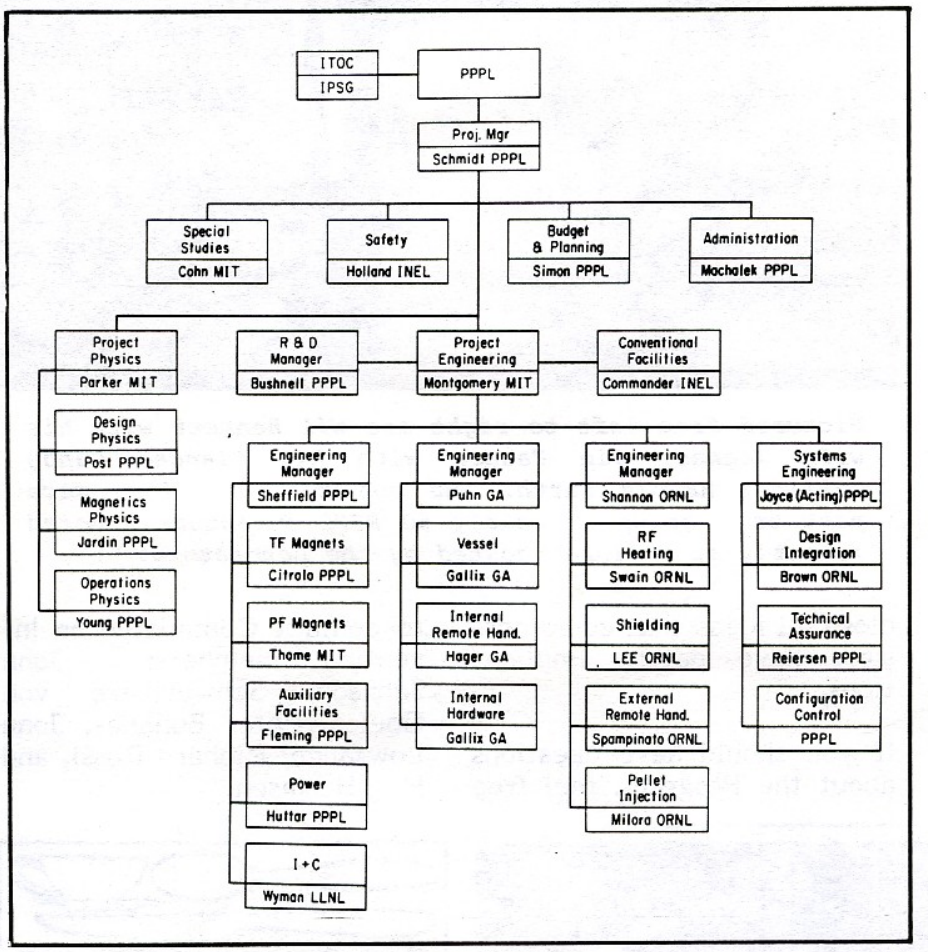
CIT will employ a poloidal divertor at the boundary of an elongated plasma to minimize plasma interaction with the vacuum vessel wall. Plasma-wall interaction will be kept low to prevent the influx of impurities that can radiate energy out of the plasma, preventing ignition. The elongated plasma geometry is suitable to the attainment of high plasma current and high plasma pressure. Past experiments have demonstrated optimized energy confinement when poloidal divertors are used in conjunction with auxiliary heating. CIT will have the additional benefit of pellet injection fueling to produce a centrally-peaked plasma density profile to facilitate ignition.

The PPL HOTLINE is issued by the Princeton University Plasma Physics Laboratory, a research facility supported by the United States Department of Energy. Correspondence should be directed to PPPL Information Services, B380, C-Site, James Forrestal Campus, ext. 2750.

PPPL
PRINCETON PLASMA PHYSICS LABORATORY
HOTLINE

Vol. 8, No. 16 May 18, 1987

CIT ORGANIZATION



Don Grove, Deputy Director for Technical Operations, recently announced further organizational assignments for the Compact Ignition Tokamak (CIT) Project. In doing so he said, "we are continuing to develop and strengthen the CIT Organization to prepare for the anticipated beginning of detailed design in FY88."

The new assignments are:

- **George Sheffield** -- Manager PPPL Engineering. George will be responsible for CIT engineering activities at PPPL.

- **Jack Joyce** -- Acting Systems Engineering Manager. Jack will be responsible for organizing and managing the large systems engineering activities associated with CIT. He will assume this position until a permanent manager is established. He will continue as the Head of the Engineering Department.

- **Charles Bushnell** -- R&D Manager. Charles will be responsible for managing R&D activities at all the institutions involved in the CIT Project.

- **Ellis Simon** -- Planning and Budget. Ellis will be in charge of project planning and cost and schedule monitoring. He will continue as Manager of the PPPL Safety Office.

The CIT Project Organizational Chart reflects these new assignments.

PPPL INVENTORS HONORED

The sixth annual invention awards dinner, hosted by the Committee on Inventions, was held April 30 at Prospect House. Nearly 60 inventors were honored for their invention disclosures, patents applied for, statutory invention registrations, and patents issued in FY86.

The annual dinner is part of the Patent Awareness Program initiated in 1981 by Dr. Harold Furth. Other forms of recognition to worthy inventors administered by the Program during the year include listing invention disclosures in the HOTLINE, awarding certificates, and providing cash awards to inventors. Cash awards consist of $100 per inventor listed on an invention disclosure with a maximum of $300 per disclosure shared

(continued)

among inventors if there are four or more and $200 per inventor for each patent application filed (no maximum).

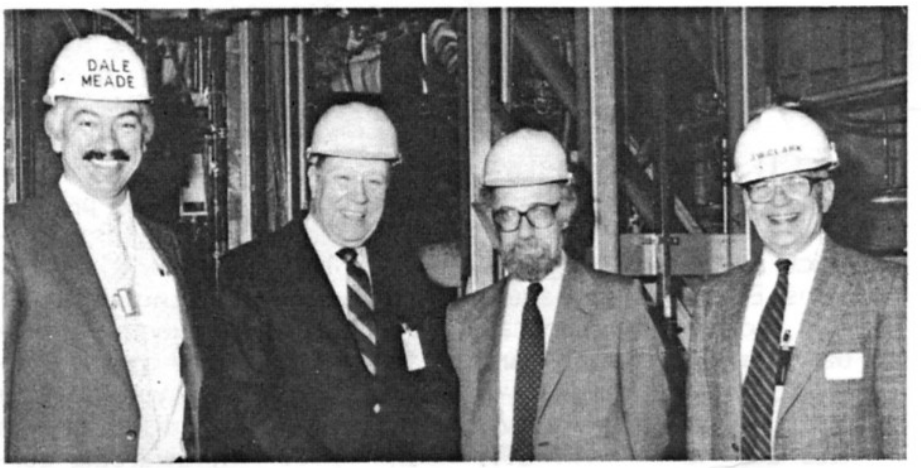
The objectives of the Patent Awareness Program are to foster the disclosure of inventions, to raise the patent-mindedness of the staff, and to provide appropriate recognition to the creative inventors on the staff.

It is particularly noteworthy that, unlike in the recent past, patents applied for and issued through Princeton University now have the potential for resulting in royalties paid to inventors. This is in line with the U.S. Government's intent to support the transfer of technology from government-sponsored research to the private sector, a "spinoff" program that deserves every creative inventor's thought and support.

Pictured from left to right are Wil Bennett with his wife Jeanne, Jim Faunce with his fiancee Candy Collins, Harold Furth, and Bob Motley. They were part of a group of nearly 60 PPPL inventors honored recently at a dinner hosted by the Laboratory.

Also, in addition to the incentives of financial gain and recognition, PPPL staff are reminded that it is part of our contractual obligation to the Department of Energy to disclose all ideas that could possibly have patent implications.

If you should have questions about the Program, feel free to contact Committee on Invention members: John Johnson, Schweickard von Goeler, Peter Bonanos, John Lowrance, Richard Rossi, and Meg Harmsen.



Admiral William J. Crowe, Jr. (second from the left), Chairman of the Joint Chiefs of Staff, toured PPPL during his recent visit to Princeton University as the second Maclean Fellow. Pictured with Admiral Crowe are, from left to right, Dale Meade, Harold Furth, and James Clark.

CAFETERIA NEEDS YOUR HELP

The C-Site Cafeteria is experiencing a shortage in trays, silverware, and china. Cafeteria management urgently requests that patrons return any such items they may have as soon as possible.

Replacement costs are steadily rising. By returning these items, you can help to keep prices as low as possible.

MAY SPEAKERS

Colloquiums are held on Wednesday at 4:15 p.m. in the MBG Auditorium, unless otherwise noted. The May colloquiums include:

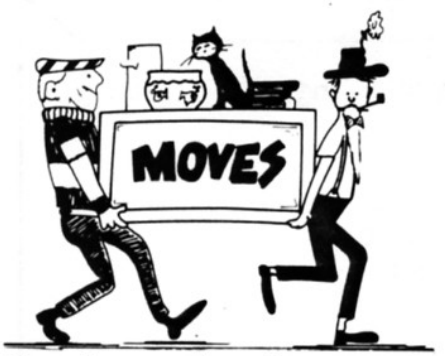
"Status of ATF Program," by James F. Lyon, Fusion Energy Division, Oak Ridge National Laboratory, 20 May.

"Impurity Penetration into a Rotating Tokamak Plasma," by King-Lap Wong, Princeton Plasma Physics Laboratory, 27 May.

"High Temperature Superconductors," by Philip Anderson, Physics Department, Princeton University, 3 June.

****

The Secretarial and Office Support Staff Organization seminar for May is "Assertiveness versus Aggressiveness," by H. McCormick. Ms. McCormick is owner and President of McCormick Associates--Executive Search. It is scheduled for Thursday, May 28 at 11:30 p.m. in the MBG Auditorium.



The **Accounting Department** and the **Information Resource Management (IRM)** Division were moved to newly renovated Module II at C-Site. Telephone extensions will remain the same.

****

Petty Cash is now located at C-Site, Module II, Room 194. The regularly scheduled hours are 9:00-10:00 a.m. and 2:00-3:00 p.m.

****

The **Mail Room** was relocated to the first floor LOB East, rooms B118-119. The telephone extension will remain the same.

****

Travel Services has a permanent home -- room B137A, first floor LOB West. The telephone extension remains the same.

****

The **public telephones** that were located next to the C-Site cafeteria have been relocated to the outside wall of the Telecommunications Center -- first floor LOB West.

NEWS BITS

Liu Chen, who was awarded a Visiting Miller Professorship.

Jack Joyce, 1987 Executive of the Year, and his secretary, Mary Ann Brown, who nominated him for the award.

Liu Chen of the Theoretical Division has been awarded the Visiting Miller Professorship by the Miller Institute for Basic Research in Science. The Miller Institute, located in California, is dedicated to supporting basic science research.

The professorship is for an eight-week period. It covers all living and travel expenses and provides for a stipend. Liu will conduct his research at the University of California at Berkeley in the Electrical Engineering and Computer Science Department.

Jack B. Joyce, head of the Engineering Department, was named Executive of the Year by the Trenton Chapter of Professional Secretaries International. Jack, who was nominated by his secretary, Mary Ann Brown, was taken completely by surprise. "They were at least two-thirds through the biographical data before I realized I was the recipient of this honor," he said. He continued, "I enjoy this situation in large measure because of the excellent support I receive from Mary Ann."

TRANSITIONS

Retirees

The HOTLINE wishes the best to the following recent PPPL retirees:

Ann O'Day, after ten years of service. Ann was a secretary in the Industrial Hygiene and Safety Group of the Administration Department.

Anthony Petryshin, after nine years of service. Tony was a Technician in the Engineering Services Group of the Engineering Department.

Joseph Sitek, after ten years of service. Joe was a Technical Associate in the Mechanical Drafting Section of the Engineering Department.

OBITUARIES

Francis "Mike" Egan died April 17. Mike was a technician in the Experimental Division and had been a Laboratory employee since 1977. He is survived by his wife, Jean Ursula, and two sons, Michael and Mark.

Memorial contributions may be made to Great Hope Baptist Church Building Fund, 2295 Spruce St. Ext., Trenton, NJ 08638.

Eugene "Gene" Shropshire died April 15. Gene was a technician in the Tritium Section of the TFTR Project and had been an employee at the Laboratory since 1980. He is survived by his wife Sara, two daughters, Michelle and Lori, and two sons, Gene and Jeffrey.

TOUR GUIDES

Sixty-six guides took 936 visitors on tour of the Laboratory during the first three months of 1986. With 410 sightseers, March led the period in number of visitors to Laboratory. We'd like to thank the guides who conducted these tours.

January

Peter Bonanos
Lloyd Ciebiera
David Ciotti
Pat Colestock
Vince Corso
Fred Dylla
James Faunce
George Gammel
George Levitsky
Tom Luce
George Martin
Holt Murray
Ernst Nieschmidt
Teguo Saito
Art Vanripper

February

William Blanchard
Anthony DeMeo, Jr.
Robert Fleming
Naren Kokatnur
Don Knutson
George Levitsky
Dennis Mansfield
George Martin
Ernst Nieschmidt
John Quanci
Stan Schweitzer
Teguo Saito

March

Halsey Allen, III
Norton Bretz
Robert Budny
Peter Beiersdorfer
David Ciotti
Pat Colestock
Hsi Feng
George Gammel
Charles Gentile
Sam Goldfarb
Robert Kaita
Naren Kokatnur
Paul LaMarche
Ed Lawson
George Martin
Ernst Nieschmidt
John Quanci
Teguo Saito
Stan Schweitzer
Allen Stevens
Marilee Thompson
Mike Ulrickson

SAFETY TRAINING COURSES

The Occupational Medicine and Safety Office has scheduled the following safety training courses for May:

Course	Date/Time/Location
Radiation Safety Training	20-22 May, 8:30 a.m.-12:00 noon Theory Conference Room
Basic First Aid	26 May, 1:30-4:00 p.m. Safety Training Trailer
Seat Belt Convincer	27 May, All Day Firehouse

Employees must obtain permission from their immediate supervisor to attend these classes. Supervisors should call Mary Ann McBride at ext. 3468 to enroll their employees.

Basic Safety Orientation for new employees is offered every Monday beginning at 8:30 a.m. in the Safety Training Trailer.

MEETING CALENDAR

May/June 1987

25 May-19 Jun — **Spring College on Plasma Physics,** Miramare, Italy. Contact: International Centre for Theoretical Physics, P.O. Box 586, I-34100 Trieste, Italy.

31 May-05 Jun — **6th Symposium on Reactor Dosimetry,** Jackson Hole, Wyoming. Contact: Mr. G.R. Lamaze, National Bureau of Standards, Bldg. 235, Gaithersburg, MD 20899. (301) 921-2767.

01-03 — **14th Conference on Plasma Sciences,** Arlington, Virginia. Contact: Mr. Frank Young, Division 1273, Sandia National Laboratory, P.O. Box 5800, Albuquerque, NM 87185. (505) 846-6228.

01-04 — **IEEE International Conference on Plasma Science,** Crystal City, Virginia. Contact: Frank Young, (505) 846-6228.

03-05 — **IEEE Minicourse on Computer Applications in Plasma Science.** Contact: Adam Drobot, (703) 634-5840.

04-05 — **8th US Symposium on Compact Toroid Research,** College Park, Maryland. Contact: Dr. A.W. DeSilva, Laboratory for Plasma and Fusion Energy Studies, Energy Research Building, University of Maryland, College Park, MD 20742. (301) 454-7092.

07-12 — **Annual Meeting of the American Nuclear Society,** Dallas, Texas. Contact: Craig Grochmal, Stone & Webster, P.O. Box 2325, Boston, MA 02107.

08-10 — **19th Fluid Dynamics, Plasma Dynamics and Laser Conference,** Honolulu, Hawaii. Contact: Mr. S. Butler, American Institute of Aeronautics and Astronautics, 1633 Broadway, New York, NY 10019. (212) 408-9740.

09-11 — **International Conference on Cometary Plasma Physics,** Trieste, Italy. Contact: Secretary, Plasma Physics Conference, ICTP, P.O. Box 586, I-34100 Trieste, Italy.

22-26 — **14th European Conference on Controlled Fusion and Plasma Physics,** Madrid Spain. Contact: Mrs. I. Garrido, CIEMAT/JEN, Division de Fusion, Avda. Complutense 22, 28040 Madrid, Spain.

22-26 — **Gordon Research Conference on Magnetohydrodynamics and Transport in Plasmas,** Plymouth, New Hampshire. Contact: Dr. K.M. McGuire, PPPL, ext. 3187.

24-26 — **25th Symposium on Engineering Aspects of Magnetohydrodynamics,** Bethesda, Maryland. Contact: Dr. Robert Kessler, 25th SEAM, Avco Research Laboratory, Inc., 2385 Revere Beach Parkway, Everett, MA 02149.

More comprehensive meeting listings may be found in Nuclear Fusion, Physics Today, IEEE Spectrum, and Communications of the ACM.

FOR SALE.....

1983 Honda 650 Nighthawk motorcycle. Mint condition, 4,800 mi. $1,599. Call Steve, ext. 3370.

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PPPL HOTLINE
PRINCETON PLASMA PHYSICS LABORATORY

Vol. 8, No. 17 June 5, 1987

SAFETY RATES TWICE

NSC's 1986 Award of Merit for "a noteworthy safety performance."

In April, PPPL received the State of New Jersey's Industry Recognition Award "for an outstanding safety performance during the year 1986."

Its commitment to the safety of employees has earned PPPL recognition from both the National Safety Council (NSC) and the State of New Jersey.

PPPL recently received NSC's Award of Merit, its second most prestigious award. According to Bill Dorn, Industrial Safety Engineer in PPPL's Occupational Safety Branch, (see related story on Safety Office reorganization), this award is based on incidence rates which consider both the frequency and severity of injuries. PPPL's rates are not only compared to the 1986 rates of similar organizations but also to PPPL's own average rate from the past three years. Significant improvement must be made in both categories to qualify for the award.

Similarly, the New Jersey State Industrial Safety Committee has reviewed PPPL's incidence rates and in April it presented PPPL with the state's Industry Recognition Award for outstanding safety performance during 1986.

"PPPL is honored to have received such commendations," said Bill Dorn. "However, we can't rely on our past performance. Safety must continue to be an every day conscious effort by us all to avoid needless accidents. This can be done by creating an awareness of the need for safe work practices, enforcing existing safety rules, and by ensuring our work environment is free of hazards."

Safety courses and dates offered are listed in the HOTLINE Safety Training Calendar. Every Monday morning at 8:30 a.m. there is a safety orientation program for new employees. Radiation Safety courses are also offered on a regular basis. Call Mary Ann McBride, ext. 3468, for details.

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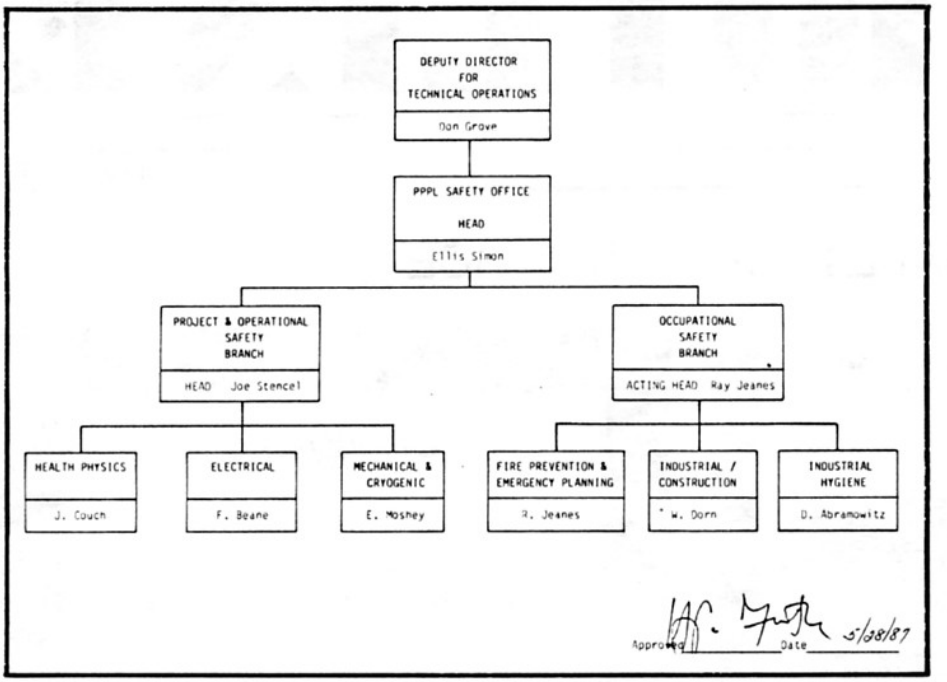
Safety Office Reorganized



PPPL Safety Office Organization Chart.

Laboratory safety and environmental functions are now organized within the Office of the Deputy Director for Technical Operations, headed by Don Grove.

The Safety Branch and the Industrial Hygiene and Environmental Controls section of the Occupational Medicine and Safety Office in the Administration Department are now part of the Project and Operational Safety Office. Ellis Simon heads the new, combined Safety Office.

Within the new office, Ray Jeanes continues as acting head of industrial and fire safety activities, now included in the Occupational Safety Branch, while Joe Stencel continues to head the Project and Operational Safety Branch.

Ellis Simon said, "Basically, the offices were combined to centralize all safety functions. In our continued efforts to improve communications, we felt combining the offices would clarify safety operations and responsibilities."

According to Laboratory Director Harold Furth, "The consolidation will permit more effective use of personnel and other resources in response to the expanded safety and environmental requirements of D-T operations in TFTR and CIT. It will also eliminate any uncertainty as to organizational responsibility for various safety and environmental tasks."

Dr. Furth also said the Occupational Medicine Program under Dr. John Tobin will remain in the Administration Department, reporting to Dick Rossi. This means Dr. Tobin will be able to devote full time to the Laboratory's medical activities with particular effort in new initiatives in preventive health and "fitness/wellness."

Dr. Furth said he made his decision to establish the new Safety Office after extensive discussions with the managers of the areas involved and on recommendation of the Executive Safety Board (ESB), PPPL's safety-policy body, chaired by Dick Rossi.

Great Adventure Selected as Site of PPPL Picnic

This year the PPPL picnic is going to be held at the Great Adventure Amusement Park. Saturday, September 26 is the date to reserve for this event.

"This change results from suggestions received from employees via the questionnaire distributed by the PPPL Social Committee earlier this year," said Steve Iverson, Chairman of the Committee. "While all the details, such as ticket costs and sales have not been completely finalized, we are really excited about being able to offer this activity," he continued.

The PPPL Social Committee was formed as a response to the Employee Opinion Survey conducted by Opinion Research Corporation. The Committee is charged with reviewing how the Laboratory Morale Fund is used to meet employee needs and to make recommendations on how it might be used in the future.

A survey to determine the number of employees who plan to attend and to help determine ticket costs, sales, menus, time, etc. will be published in the next issue of the HOTLINE.

(continued)

Members of the PPPL Social Committee. Seated from left to right are Barbara Sarfaty, Martha Redi, and Mary Ann Brown. Standing from left to right are Elmer Fredd, Dinah Larsen, Angelo Candelori, and Rosemary Fuccello. Members not shown are Tony Bleach, Fred Dylla, Jim Taylor, and Steve Iverson.

Woolsey's Children Fund Hits $6,100

PPPL Employees have contributed over $6,100 to the John Woolsey Children's Trust Fund, and donations are still coming in. Bob Majeski, John's supervisor, was responsible for organizing the fund drive at PPPL. The trust fund was established for the children Gregory, Joseph, Kristen, and John by the Hamilton Fire Company after John and Kathleen's tragic deaths in March.

New Stockroom Procedures

Don't be alarmed if Chariots of Fire and Davy Crockett (no kidding) appear at your desk. That means you have just used the new delivery system for obtaining Laboratory office supplies.

By now, you've probably heard the Materiel Control Office has instituted a new procedure for getting your office's supplies.

According to Chris Gillars, Head of Materiel Control, the new system will save money and space for the Laboratory while improving service.

"Instead of the current 500 stock items, we'll have almost 10,000 items to choose from," said Gillars, who explained the system was implemented after considerable study of other laboratories' procedures.

"Our vendor, Philadelphia Stationers, and its subagent, Chariots of Fire operated by Davy Crockett, will deliver your order directly to your desk," said Gillars.

To order office supplies, you fill out a preprinted Material Requisition (MR) form after selecting from a special line-art catalog with descriptions and pictures. The MR form also lists the most commonly used items. You send the form to the stockroom and the vendor delivers materials directly to you within two working days for stock items and five days for nonstock items. Additionally, a monthly cost center manager's report will be provided which will list purchases and costs.

"We're very confident the system will be successful," said Bill McCreedy, Manager of the Stores Operations Branch.

"I anticipate some resistance but once people begin using the system, they'll be pleased," said McCreedy. He emphasized for other than office supplies, stockroom support will continue to be provided from the C-Site stockroom.

Already one meeting has been held to explain the new system. During the month of June, Rick Cargill will be available at the C-Site stockroom from 10:00 to 11:00 a.m. and from 2:00 to 3:00 p.m. to answer your questions and to provide assistance in placing orders.

Questions? Call ext. 2853 or ext. 3479.

Think Route 1 is Bad?

Some workers in the South African "homeland" of KwaNdebele must line up for buses to Pretoria as early as 2:00 a.m., then commute four or more hours to an eight-hour job, after which they face a four-hour trip home.

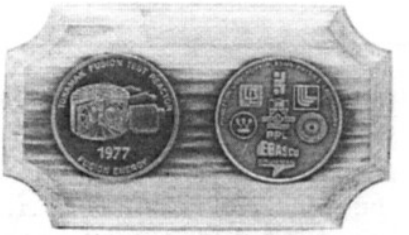
PPPL Corporate Award Winners Honored

1987 PPPL Corporate Award winners and guests.

The twelve 1987 PPPL Corporate Award winners in the National Energy Foundation's Ninth Annual Student Exposition on Energy Resources (SEER) science fair competitions were guests of the Laboratory on May 11. Two of the winners, Meredith Sobel and Gordon Strachan, are children of PPPL employees Barbara Sobel and Jim Strachan, respectively.

Recipients of this year's awards were selected by Charles Ancher, Mary Ann Brown, Ernest Nieschmidt, and John Bradish, who volunteered to serve as judges for the fair.

The SEER competition is sponsored by the New Jersey Chapter of the National Energy Foundation. The science-fair-type competition is designed to stimulate and challenge students to think about energy and energy-related technologies and to provide them with an opportunity to develop their skills in scientific research and experimentation.



New Jersey companies and institutions are invited to sponsor corporate awards, which are given in addition to the National Energy Foundation's SEER awards. PPPL has been giving corporate awards since 1983. In addition to a tour of the Laboratory, this year's winners were presented with plaques and letters of commendation during a special luncheon held in their honor.

Attention PPPL Travelers

The Travel Section of the Accounting Division has been experiencing many problems in processing employee travel vouchers due to misunderstanding of the new travel regulations. Generally, travelers have been incorrectly calculating their daily allowance for subsistence expenses.

It is the responsibility of all Laboratory travelers to familiarize themselves with the travel policy before the onset of a trip. This will ensure that unallowable expenses are not incurred and will facilitate a more expeditious processing of travel reimbursements.

For information or questions relating to the new reimbursement policies and procedures, employees should call Charles Kahil, ext. 2699 or Frances Gantiosa, ext. 3500. Questions concerning travel planning should be directed to Ilse Gusciora, ext. 2658.

Petty Cash

The Petty Cash Office is now conveniently located at C-Site, Module II, Room 194. Office hours remain unchanged: mornings from 9:00 to 10:00 a.m. and afternoons from 2:00 to 3:00 p.m.

Services provided by Petty Cash include cash advances for emergency travel, reimbursement of miscellaneous expenses of up to $200.00, and cashing of personal checks of up to $100.00. PPPL employees are reminded that they must present a valid PPPL ID badge to receive reimbursements.

The Accounting Division invites all employees to take full advantages of these ser-

(continued)

vices. Questions regarding reimbursements may be directed to Flo Short at ext. 3503.

Invention Update

PPPL's Patent Awareness Program was established in 1981 to recognize inventors and to raise the patent-mindedness of Laboratory staff. A Committee on Inventions makes cash awards to inventors for their new or novel ideas. Additional monies are awarded if a patent application on the invention is filed.

Invention disclosures filed since October 1986 include:

- Solid Metallic Tube Sheath Remover for Coaxial Hard Line Cables, by R. Pope
- Portable Payout Stand for 300' Rolls of Computer Printer Paper, by R. Pope
- Shaft Oil Seal Extractor for Use in Confined Areas, by R. Pope
- An Extractor for Removing Pressed in Lock Barrels from Slide Bolt Blocks, by R. Pope
- Sensitive Leak Test Telescope, by W. Blanchard, J. Hemmerich, and T. Winkel
- 'Spark Plug' Impurity Injection Diagnostics, by D. Meyerhofer and F. Levinton
- Round Nosed Locking Pliers, by W. Persely and R. Pressburger
- Load Carrying Fixture with Load Rotation Feature, by E. DuBois, J. Frangipani, K. Mann, and A. Patterson
- Tomographic Scanner Using Induced Synchrotron Radiation, by N. Fisch, P. Efthimion, and T. Luce
- Low Temperature Injection Cooling Method, by J. McDade and H. Gentzik
- Boxcar Photography, by G. Greene

For further information about invention disclosures or the patent process, contact Meg Harmsen at ext. 2659.

The "Convincer" Visits PPPL

As fellow employees look on, Bill Osborne is strapped in and ready to ride the "Convincer." Participants at the demonstration learned that wearing seat belts increases the chance of surviving an automobile accident by 60%.

"Buckle up, it's our law." On May 27, the New Jersey State Safety Council, in cooperation with the New Jersey Office of Highway Safety, presented several live demonstrations on the use of seat belts.

The "Convincer," a roller-coaster-type device, was used in conjunction with a 140-lb dummy to show what happens on impact at low speeds (8-10 mile per hour) when seat belts are not worn. Members of the audience were then invited to try the Convincer while wearing seat belts. Most remarked that it wasn't very pleasant and that it hurt.

Along with the demonstration, participants were instructed on the proper way to wear seat belts (low around the hips, not the stomach, and across the chest), were given safety suggestions, and were shown a film.

This program was part of the Safety Training Courses offered in May by the Occupational Safety Branch. The Safety Training Calendar is published each month in the HOTLINE.

June Speakers

Colloquiums

The colloquium series for 1986-1987 has concluded. The series will begin again in September.

Seminars

The Secretarial and Office Support Staff Organization seminar for June is "Stress -- Job Burn-Out," by Jane McCormick. Jane is a nurse in the Office of Occupational Medicine at PPPL. The seminar is scheduled for Thursday, June 25 at 11:30 a.m. in the MBG Auditorium.

TRANSITIONS

Births

The HOTLINE offers its congratulations to the following employees, who recently became proud parents.

Mark Tanenbaum of Maintenance and his wife, Bambi, whose daughter, Brittany Michelle, was born May 4.

Sharon Hughes of Information Resource Management and her husband, Jonathan, whose son, Mark Jonathan, was born May 8.

Paul Sichta of the Computer Division and his wife, Donna, whose son, Kevin, was born on May 10.

Steve Landau of the Mechanical Engineering Department Vacuum Shop and his wife, Paula, whose daughter, Christina Marie, was born on May 17.

NEWS BITS

Sally Connell graduated with high honors from Rutgers.

Sally Connell, Head of the Administration Branch of the Computer Division, recently received a Bachelor of Science degree in Accounting from University College, New Brunswick, of Rutgers, The State University. She graduated with high honors.

Sally, who joined PPPL in 1975 as an Office Assistant in the Accounting Division, has been attending school part-time for the past ten years.

Stephan Bosch, Otto-Hahn medal winner.

Stephan Bosch has received an Otto-Hahn medal for his Ph.D. thesis work on diagnostics development for charged fusion products from very hot plasmas.

A few of these medals are awarded each year by the Max-Planck-Gesellschaft, a foundation that owns about fifty research institutions and which is funded mainly by the German federal government.

Stephan did his thesis work at the Max-Planck-Institut für Plasmaphysik in West Germany while working on the ASDEX tokamak. He joined the Research Staff at PPPL in February and works in the Fusion Products Branch of TFTR, headed by J. Strachan.

Stewart Zweben of the TFTR Fusion Products Branch and his wife, Veronica, whose son, David Jeremy, was born on May 24.

Retiree

The HOTLINE wishes the best to the following recent PPPL retiree:

Gilbert Tetreault, after twenty-three years of service. Gil was a technician in the Engineering Services Group of the Engineering Department.

For Rent

High in the New York state Adirondack mountains is a quiet lake front house. Only one week is still available for the summer: 11-18 July. The house has three bedrooms and is fully equipped with all the comforts of home. A row boat is included. $345 per week, a brochure is available. Contact Ed Moshey, ext. 2306 or phone 683-1169 after hours. Fall and winter ski season reservations are being accepted.

OBITUARY

John F. Pacuta died May 18. John was an Administrator in the Maintenance Division and had been a PPPL employee for twenty-seven years.

John is survived by his wife, Sally Pacuta; a daughter, Frances S. Orlando; and two sons, Ronald J. and Michael D. Orlando.

Memorial contributions may be made to the East Windsor First Aid Squad No. 1, One Mile Road, East Windsor, NJ 08520, or the American Cancer Society, 652 Whitehead Road, Trenton, NJ 08638.

Laboratory to Close for Christmas Holidays

The Laboratory Council has approved a Laboratory closing during the December holiday season. The dates are being announced now to allow employees the opportunity of scheduling and planning well in advance.

The dates of the closing are December 24, 1987 through January 3, 1988.

Day	Date	Type of Leave
Thursday	December 24	University Holiday
Friday	December 25	University Holiday
Monday	December 28	Laboratory Closing
Tuesday	December 29	Laboratory Closing
Wednesday	December 30	Laboratory Closing
Thursday	December 31	University Holiday
Friday	January 1	University Holiday

All staff members will have the option to charge three days (December 28, 29, and 30) as vacation or they may use one or two of their Optional Holidays. Those who anticipate special problems are urged to talk to their supervisor or to contact the Personnel Office as soon as possible.

Exempt staff members will receive their December paycheck on Monday, December 21; Bi-weekly staff members will receive their paycheck on Wednesday, December 23.

Safety Training Courses

The Occupational Safety Branch has scheduled the following safety training courses for June:

Course	Date/Time/Location
Radiation Safety Training	8-10 June, 8:30 a.m.-12:00 noon LOB Auditorium
Back Injury Prevention	11 June, 8:30 a.m.-12:00 noon Theory Conference Room
Lockout/Tagout Procedures	18 June, 1:30-3:00 p.m. Safety Training Trailer
Respiratory Protection	23 June, 8:30-11:00 a.m. Theory Conference Room
Basic Electrical Safety	24 June, 9:00-10:30 a.m. Theory Conference Room

Employees must obtain permission from their immediate supervisor to attend these classes. Supervisors should call Mary Ann McBride at ext. 3468 to enroll their employees.

Basic Safety Orientation for new employees is offered every Monday beginning at 8:30 a.m. in the Safety Training Trailer.

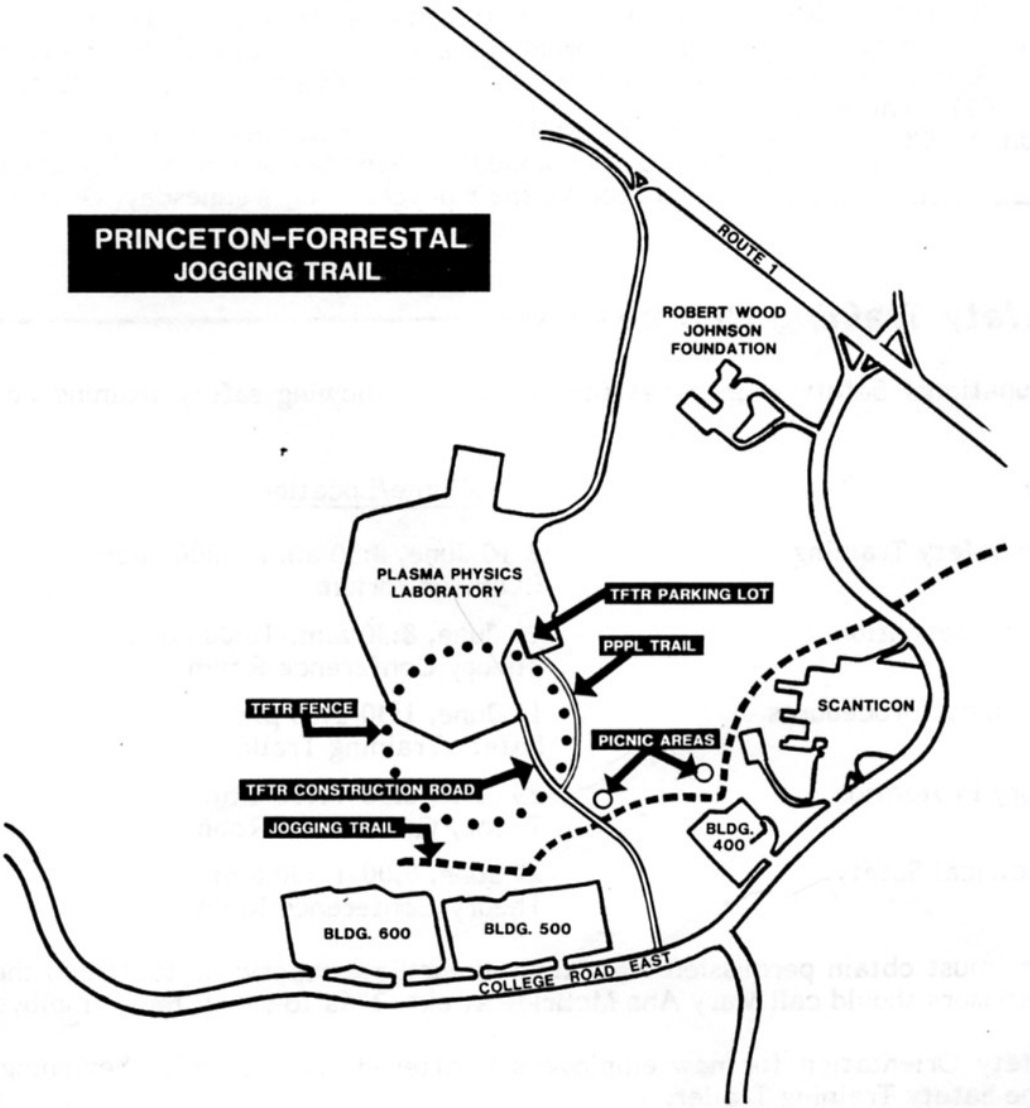
PPPL Neighbors Share Recreational Facilities

The Princeton Forrestal Center is in the process of establishing its Moran Woods recreational facilities. At this time, the Center is providing a network of scenic trails, picnic areas, and related recreational facilities for use by Princeton Forrestal employees. PPPL employees are welcome to use these facilities. Some of the trails and picnic areas are now available to use; others will be added as the Center and Moran Woods continue to develop.

PPPL Plant Maintenance is in the process of upgrading a connecting trail from C-Site to the Moran Woods' trails by way of the TFTR construction road. This trail starts at the TFTR gravel parking lot and follows the TFTR fence line to the construction road. A short jog or walk along the construction road will take you to the well-marked Moran Woods' trail system. (See map.)

The PPPL trail is presently open for employee use. With completion of the fix-up, the trail will be more passable in wet and muddy weather.

Suggestions from employees with regard to recreational facilities at PPPL should be sent to Bob Smart, B322, C-Site.



PPPL
PRINCETON PLASMA PHYSICS LABORATORY
HOTLINE

Vol. 8, No. 18 June 26, 1987

BUSINESS OUTREACH A+

Teamwork coupled with outstanding outreach efforts helped PPPL achieve top honors for subcontracting with small and disadvantaged businesses.

The Secretary of Energy, through the DOE Princeton Area Office, awarded PPPL the Small Business Achievement Award and the Disadvantaged Business Achievement Award for both 1985 and 1986.

Annually, the Secretary, with the assistance of an Awards Selection Panel, awards contractors for "conducting outstanding small business utilization programs and achieving results in excess of approved goals." For 1985 and 1986, PPPL exceeded its goals by more than 20 percent.

According to PPPL's Head of Procurement Roger Gould, "Total team effort is the major factor contributing to PPPL's business awards. We are proud to have attained such distinguished honors."

DOE Contract Specialist Ray Kimble, who represented the Secretary of Energy at the awards presentation ceremony on June 15th, said, "These awards show PPPL strives to achieve close working relationships with small and disadvantaged businesses. Their relationships show clear evidence of a viable subcontracting 'plan' system in compliance with Public Law 95-507."

DOE awards presented to PPPL are held by (from left to right) Dick Rossi, Associate Director for the Administration Department; Roger Gould, Head of PPPL Procurement; Ray Kimble, DOE Contract Specialist; and PPPL Director Harold Furth.

Mapping Mail Services

Rain nor snow nor sleet deter the employees of PPPL's Mail Services, but Mondays, well they present a challenge.

A recent study of mail services, conducted by Meg Harmsen, Manager of Technical Information and Administrative Services, revealed that 2700 pieces of mail are handled by PPPL Mail Services staff on Mondays, 42 percent more than the other weekdays. About 2000 pieces of mail per day are delivered on the average from Tuesday to Friday. Surprised?

These statistics show that PPPL Mail Services staff deliver about 528,000 pieces of mail a year which include large interoffice envelopes, first class letters, foldovers, small interoffice envelopes, flats, reports and books, and small packages. The majority of mail delivered is large interoffice envelopes at 44 percent with first class letters at 18 percent. Foldovers constitute 13 percent, small interoffice envelopes make up 9 percent, and reports and books, and flats both equaled 8 percent.

According to Meg, "The study is based on data gathered at the beginning of Fiscal Year 1987.

"The study's purpose was fourfold: (1) to get an overview of the volume of mail deliver-

(continued)

ed, (2) to observe where mail is delivered in view of the consolidation and relocations, (3) to see if mail services and personnel are used effectively, and (4) to assess the impact of time-sensitive, Lab-wide mailings on daily mail operations (for example, HOTLINE)."

She emphasized the data gathered are only for mail delivered. Meg said, "They do not include the steps of pick-up, sort or other special handling (for example, packages are a small percentage, but often they require a special trip for delivery).

Meg recently participated in a Department of Energy (DOE) sponsored conference which focused on mail services, especially accounting of mail and cost savings.

She said various other DOE facilities outlined their mail services systems. For example, Morgantown Energy Technical Center in West Virginia, has about 600 employees. It has a combined mail and duplication office with six staff which process approximately half the mail volume that PPPL staff process. However, it also schedules and guarantees delivery of reproduction jobs.

Lawrence Livermore National Laboratory in California, which has from 8,000 to 10,000 employees, has 25 mail staff. It delivers about 11,000 pieces of mail per day to 480 mail stops.

Meg said, "As a result of this study, PPPL probably will make some adjustments in mail services in the future, such as reorganizing mail routes."

Each PPPL employee can help speed mail delivery by using large interoffice envelopes when feasible, legibly writing name and delivery site, not using labels to seal foldover mail, and alerting mailroom staff in advance of large volume mailing.

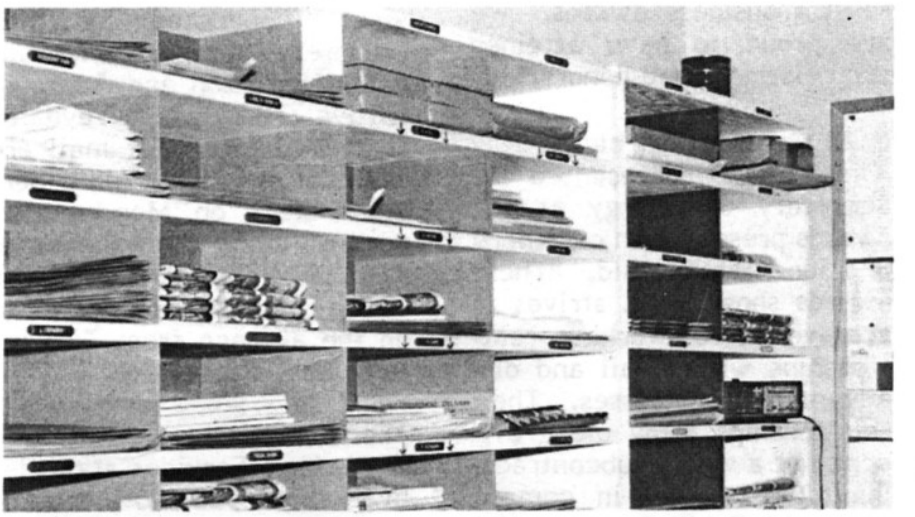
Lead Postal Clerk Tom Fratticcioli added, "It also helps us to know when new employees come on board. We'd appreciate it if the secretaries would let us know about new hires. The mailroom is now located in 118B, next to the cafeteria. The telephone extension is 3131."

Additional mail service studies will be undertaken with the aim of improving mail service.

For now, employees Tom Fratticcioli, Joe Mattera, Debbie Anastasio, and George Georgios know that for them, Monday is truly the busiest day of the week.

by Phyllis Rieger

Mail Services employees include: (l to r) Debbie Anastasio, Joe Mattera, Tom Fratticcioli, and George Giorgios.



Monday mail delivered is 42 percent more than other days.

Jack Joyce (right), who is responsible for coordinating consolidation efforts at PPPL, receives the keys to the new High-Bay Shop from the construction supervisor Robert Longmuir (left). Pat Corcoran (center) was administrator of the construction contracts. Building construction was completed on schedule -- June 6.

The ribbon cutting ceremony for the new High-Bay Shop was attended by (from left to right) Bob Smart, Bob Kress, Bob Longmuir, Pat Corcoran, Bob Rodgers, Herb Mix, Jack Joyce, and Milt Johnson.

The recent HOTLINE article on the selection of the Great Adventure Amusement Park as the site of the PPPL picnic contained some errors.

Susan Murphy was inadvertently left out when the members of the PPPL Social Committee were given.

Steve Iverson and Rosemary Fuccello are not Committee members.

Two CITs For Princeton?

Princeton University has a Vice President for CIT -- Computing and Information Technology, that is.

Ira Fuchs, Princeton's "CIT" Vice President, recently presented a special colloquium at PPPL on "The Future of Computing at Princeton."

During this presentation he explained the merging of Computing, Management Information, Telecommunications, and Printing Technology under CIT. He related the current status of "Networking" at the University, which allows on-campus users to connect their terminals to and ship files between the available computers.

(continued)

Ned Sauthoff (left), Head of the PPPL Engineering Department's Computer Division, pins the microphone on Ira Fuchs (right), Vice President for Computing and Information Technology at Princeton University.

Who's New?

Phyllis Rieger joined PPPL in May as an Information Officer and Writer.

Phyllis Rieger is the new information officer/writer in the Information and Administrative Services Branch, headed by Tony DeMeo, Jr.

She'll be responsible for supporting public information endeavors, writing and editing articles, and answering media inquiries.

Phyllis brings over 12 years of writing and public relations experience to her new job.

For eight years, she was managing editor of the monthly magazine of the New Jersey State League of Municipalities which provides lobbying and information services to the State's 567 local governments. During this time, she represented the League on several committees including the N.J. Supreme Court Task Force to Reform The Municipal Court System and the N.J. Municipal Public Information Contest Coordinating Committee, among others. Additionally, she coordinated special League seminars on various subjects, including media relations, emergency preparedness and historical preservation.

Phyllis was also senior sales promotion coordinator for the Thiokol Corporation where she edited three product newsletters.

Before this, she worked as an information specialist/writer for the N.J. School Boards Association and the Career and Vocational Education Division of the Philadelphia School District.

Phyllis has been a reporter for the Bucks County Courier Times and has taught adult education writing classes for the Ewing and Hamilton Township School Districts.

She's a council member of the N.J. Chapter of the American Society of Public Administration.

Phyllis has a B.A. Degree in English from LaSalle University, Philadelphia, and an M.A. Degree in English from Villanova University. She has also studied at the University of Pennsylvania, Temple University and Rider College.

Battle of the Bowl

The Low Rollers Team of the Princeton University Mixed Bowling League was on a high as it emerged #1 during the first half of the season. Low Rollers Team members Matt Lawson, John Luckie, Noreen Cruser, Kim Prutky, and Jerry Siminoff continued to bowl boldly but the Plasmaniacs Team garnered first place honors for the second half of the season.

Would Plasmaniacs Team members Elmer Fredd, Lynne Shapiro, Dick Yager, George Cutsogeorge and Sue Manning win the roll-off on May 13th?

Battle of the Bowl raged. And flashing the V for Victory sign

(continued)

at roll-off's end were the Low Rollers. Congratulations!

If you'd like to roll to relax, you can sign up for the 1987-88 bowling season which begins September 9.

According to Bowling League Secretary Sarah Thomas, "New members are welcome. We meet for 34 Wednesdays beginning at 6:30 p.m. at Colonial Lanes, Lawrenceville.

"This past season we had 40 members divided into eight teams. The Bowling League has been operating since 1982 and we've had alot of fun."

To sign up, call League President Elmer Fredd at 2120 or Sarah Thomas at 3711.

Bowling banquet is enjoyed by winning Low Rollers who include (l to r): Jerry Siminoff, guest, Noreen Cruser, Kim Prutky, John Luckie, and Matt Lawson.

Safety Training Courses

The Occupational Safety Branch has scheduled the following safety training courses for July:

Course	Date/Time/Location
Radiation Safety Training	30 June-2 July, 8:30 a.m.-12:00 noon LOB Auditorium
ASC Training/Meeting	08 July, 9:00-10:00 a.m. LOB Auditorium
Back Injury Prevention	09 July, 8:30 a.m.-12:00 noon Theory Conference Room
ASC Training/Meeting	14 July, 3:00-4:00 p.m. LOB Auditorium
National Electric Code Changes	14-15 July, 9:00-11:00 a.m. Theory Conference Room
Back Injury Prevention	16 July, 8:30-12:00 noon Theory Conference Room
Proper Use of Fire Extinguishers	21 July, 1:30-3:00 p.m. Safety Training Trailer
Basic First Aid	29 July, 8:30 a.m.-12:00 noon Safety Training Trailer

Employees must obtain permission from their immediate supervisor to attend these classes. Supervisors should call Mary Ann McBride at ext. 3468 to enroll their employees.

Basic Safety Orientation for new employees is offered every Monday beginning at 8:30 a.m. in the Safety Training Trailer.

Meeting Calendar

July

01-03 **14th Annual Conference on Plasma Physics,** St. Andrews, Scotland, United Kingdom. Contact: Dr. R.A. Cairns, Department of Applied Mathematics, University of St. Andrews, North Haugh, St. Andrews, Fife KY16 9SS, Scotland, U.K.

07-13 **Conference on Small Scale Turbulence and Anomalous Transport in Magnetized Plasmas,** Cargese, France. Contact: Mr. D. Gresillon, Ecole Polytechnique Laboratoire de Physique de Milieux Ionises, F-91128 Palaiseau Cedex, France.

09-10 **Workshop on the Current-Driven Electrostatic Ion-Cyclotron Instability,** Innsbruck, Austria. Contact: Dr. R. Schrittwieser, Institute for Theoretical Physics, University of Innsbruck, Technikerstrasse 25, A-6020 Innsbruck, Austria

13-17 **18th International Conference on Phenomena in Ionized Gases,** Swansea, United Kingdom. Contact: W.T. Williams, University College, Swansea, SA2 8PP, Wales, U.K. Phone: 0792-205678, ext. 4464.

22-28 **15th International Conference on Physics of Electronic and Atomic Collisions,** Brighton, England. Contact: W.R. Newell, Department of Physics, University College of London, London WCIE 6BT, U.K.

30 Jul-01 Aug **Meeting on Atomic Collisions in Fusion,** Oxford, United Kingdom. Contact: Dr. H.P. Summers, JET Joint Undertaking, Abingdon, Oxfordshire, OX14 3EA, U.K.

August

17-21 **SMiRT-9: International Conference on Structural Mechanics in Reactor Technology,** Lausanne, Switzerland. Contact: Folker Wittmann, Ecole Polytechnique Federale de Lausanne, SMiRT-9, Chemin de Bellerive 32, CH-1007 Lausanne, Switzerland. Phone: 41-21 47.28.25 or 47.28.31

17-21 **First Energy Independence Conference: Fusion Energy and Plasma Physics,** Rio de Janeiro, Brazil. Contact: Energy Independence Conference COPPE/UFRJ, C.P. 68513, 21945 Rio de Janeiro, RJ, Brazil.

24-29 **Workshop on Theory of Fusion Plasmas,** Varenna, Italy. Contact: Dr. F. Troyon, Centre de Recherches en Physique des Plasmas, Ecole Polytechnique Federale, 21 avenue des Bains, CH-1007 Lausanne, Switzerland.

25-29 **6th Conference on the Computation of Electromagnetic Fields,** Graz, Austria. Contact: K. Preis, INTERCONVENTION, P.O. Box 80, A-1107 Vienna, Austria.

More comprehensive meeting listings may be found in Nuclear Fusion, Physics Today, IEEE Spectrum, and Communications of the ACM.

The PPPL HOTLINE is issued by the Princeton University Plasma Physics Laboratory, a research facility supported by the United States Department of Energy. Correspondence should be directed to PPPL Information Services, B380, C-Site, James Forrestal Campus, ext. 2754.

You are Invited

To:	PPPL Picnic
When:	Saturday, September 26, 1987
Time:	10:00 a.m. to Park closing
Where:	Great Adventure Amusement Park Jackson, New Jersey
Cost:	$5-7 (final cost per person to be determined)
Includes:	Picnic lunch, beer and soda, parking, entrance to the safari, amusements, and shows.
Who:	PPPL employees. Single employees may bring one guest. Married employees may bring their spouse and dependent children. All other attendees will be charged full entrance fee.

To determine the exact cost per ticket to employees and to permit ordering enough food and beverages, the PPPL Social Committee needs an idea of the number of employees and their guests who plan to attend.

Please RSVP by July 7th to Rosemary Fuccello, Personnel, Room B175, C-Site.

Thank You

Name:_____ Number of Tickets:_____

Return to: Rosemary Fuccello
Personnel
Room B-175
C-Site

PPPL
PRINCETON PLASMA PHYSICS LABORATORY
HOTLINE

Vol. 8, No. 19 July 24, 1987

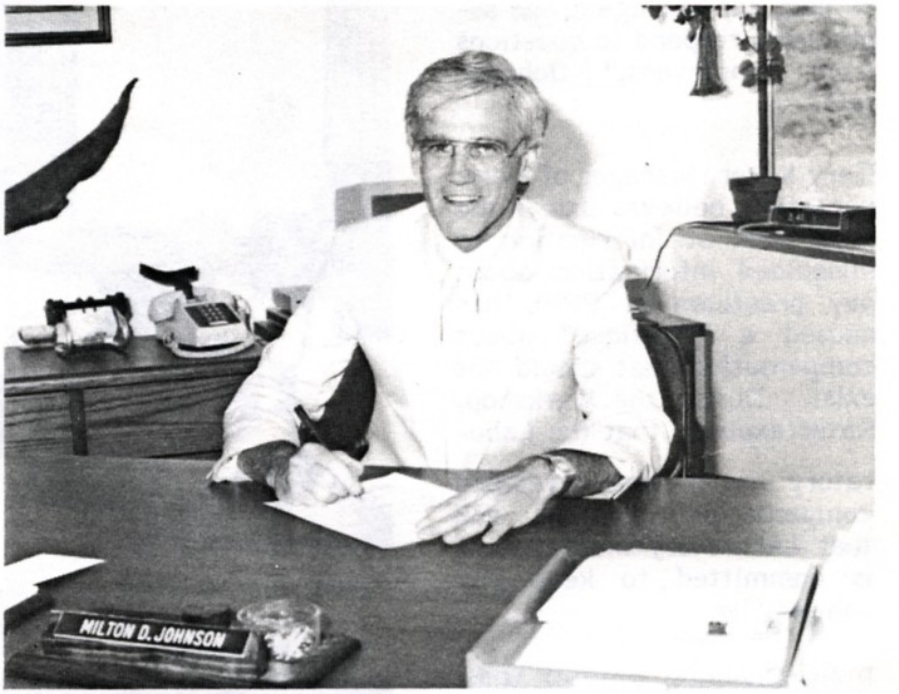
MILT JOHNSON APPOINTED AREA MANAGER FOR PAO

Milton D. Johnson was appointed Area Manager for the U.S. Department of Energy's Princeton Area Office, effective 5 July 1987. He has been the Acting Area Manager since August 1986.

Milt will be responsible for the administration and oversight of the U.S. Department of Energy's contract with Princeton University to manage the Princeton Plasma Physics Laboratory and for the proposed Compact Ignition Tokamak Project.

Born in Jamestown, New York, Milt received his B.S. (1962) and M.S. (1966) in Engineering from the University of Arizona and his Ph.D. (1975) in Plasma Physics from Cornell University. He is a member of the American Physical Society.

Milt worked as an electrical engineer at the Lawrence Livermore National Laboratory and as a research engineer at Cornell University before joining the Atomic Energy Commission (now the U.S. Department of Energy) in 1975 as a member of the Controlled Thermonuclear Division in the Office of Fusion Energy. In 1980, he came to the Princeton Fusion Program Office (now the Princeton Area Office) as Chief of the Engineering and Physics Branch. He was named the Assistant Area Manager for the Princeton Area Office in 1983.



Milt Johnson, new Area Manager of the USDOE Princeton Area Office.

Milt resides in Plainsboro with his wife, Kathy, and their two children, Kristina and Noel.

Workshops Focus on PPPL Pay Practices

Nearly sixty Laboratory supervisors and managers have attended Compensation Workshops since the classes began in May. Over the next year, all supervisors and managers will attend the one-day workshops which are designed to provide information about all aspects of compensation at the Laboratory. Additionally, informative meetings will be held with all employees beginning next year.

A pilot session of the workshop was conducted by the Personnel Division earlier this fiscal year, and recommendations made by the initial participants were incorporated into the present course design.

According to Bill Johnson, Manager of Employee Relations and Manpower Development, the Workshop responds directly to a need for a better

(continued)

understanding of pay and pay practices at the Laboratory, as revealed by the Employee Opinion Survey conducted last year.

"The survey results told us there was much concern about pay and promotion issues and that we needed to find a way to help our managers and supervisors respond to questions from employees," Johnson said.

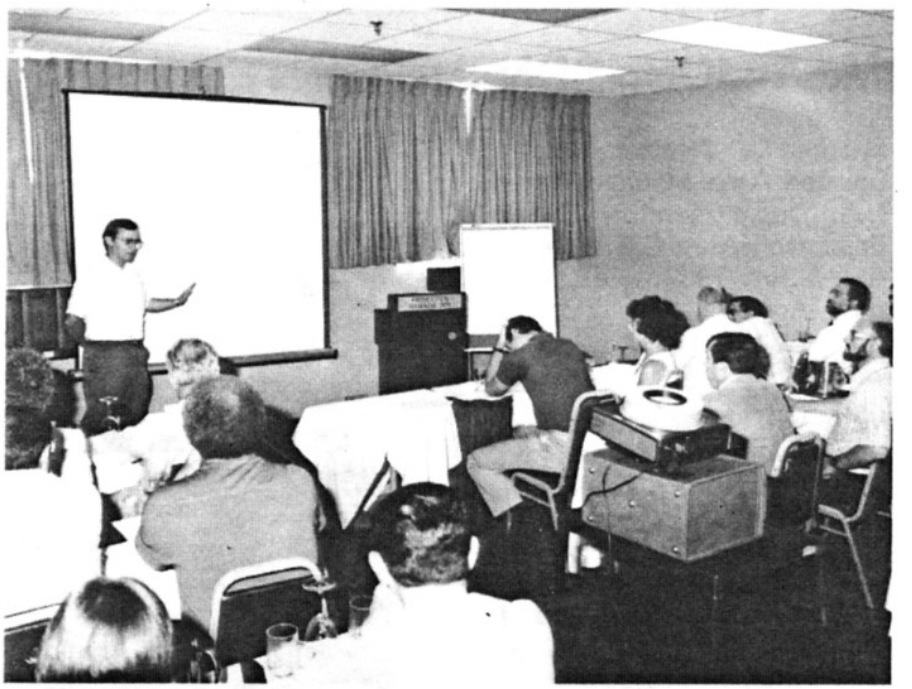
Gary Kater, Manager of Compensation, believes that in the past, lack of information or misguided information about pay practices at PPPL has caused a "mystique" about compensation that should not exist. During the Workshop, Kater explains that the Laboratory has a well-developed compensation program and that Laboratory Management is committed to keep pay competitive.

Ruby Cochran, Payroll Manager in the Accounting Division, found the workshop "very interesting." She said, "I found that we (PPPL) really are competitive with other industries on Route 1. I also learned the logic of how the system was developed, as well as how it works."

The Workshop begins with a review of the Laboratory's compensation objectives and concludes with a discussion of how individual salary actions are determined.

"The Compensation Workshop is very worthwhile," said Kees Bol, Head of Experimental Projects in Technical Operations. "I would encourage every supervisor and manager to take it. It is very helpful in understanding where the Laboratory is going with its compensation policy, and it is a great step to having the policy uniformly applied across the Laboratory."

The Compensation Unit in the Personnel Division has developed a Compensation Guide for managers and supervisors to use as a reference to answer questions.



PPPL supervisors and managers learn about Laboratory pay practices and policy during a recent Compensation Workshop.

During the Workshop, participants formed small, problem-solving groups to work on various pay issues. From left to right are Bob Sissingh, Steve Ragolia, Jr., John Harralson, Judy Malsbury, and Milt Machalek.

Volunteers & Visitors -- A Winning Combination

Kids not only say the darnedest things, they sometimes write them too. A thank you note from a group of Pemberton High School students who toured the Laboratory contained these comments:

"I enjoyed seeing a real-life plasma."

"I liked the dungeon."

"I thought the replica of the TFTR was interesting and the place very unusual."

"I was impressed with the idea of harnessing power."

"...I hope you receive the funding."

"...imagine the brain power that came up with the way to do all that."

"This idea of creating a more efficient source of power, and less harmful is fantastic. Its purpose will serve the whole nation and help improve our way of life."

These students are among the over 5,000 visitors who tour the Laboratory each year. You've probably seen some of the visitors. They come in all sizes and ages, ranging from high school physics students to senior citizen groups. Visitors represent professional, technical, and scientific organizations; students, teachers, and just interested individuals. PPPL is host to many foreign visitors as well. Last month's visitors included representatives from Italy, Holland, West Germany, France, and Canada.

As part of PPPL's efforts to foster positive public relations, tours enable our neighbors from surrounding communities, as well as educational institutions, to see what PPPL is all about while learning about magnetic fusion energy.

Before the tour, visitors usually view a slide-sound show which provides an overview of PPPL and fusion energy. The guide takes a few minutes to explain PPPL's mission and what will be seen during the visit. When possible, the tour includes a trip to TFTR.

Many visitors enjoy wearing the yellow hardhats that have always been required as a safety precaution for TFTR tours. Ideally, one guide is provided for each group of 15 visitors. It is the guide's responsibility to carry a film badge for the group and to see that the visitors sign in before the tour begins.

Helping others to understand plasma production are several employees who act as "guiding lights" for the tours. These employee volunteers are vital to the visitor program. Dr. Harold Furth, head of the Laboratory, said he is pleased that "Over the years, many staff have vigorously supported our visitor program by volunteering to serve as Laboratory guides and speakers. They find the experience challenging and rewarding and recognize the importance of keeping the public informed on the significant progress being made in magnetic fusion and our recommendations for future devices."

These sentiments are echoed by George Martin, section head of the Cryogenics Engineering Branch, who has served as a PPPL guide for 20 years. "I like it because I like my work and I enjoy talking about it," said George. You may recall during the May Open House and Family Day, George assumed the role of "Mr. Nitrogen," the mes-

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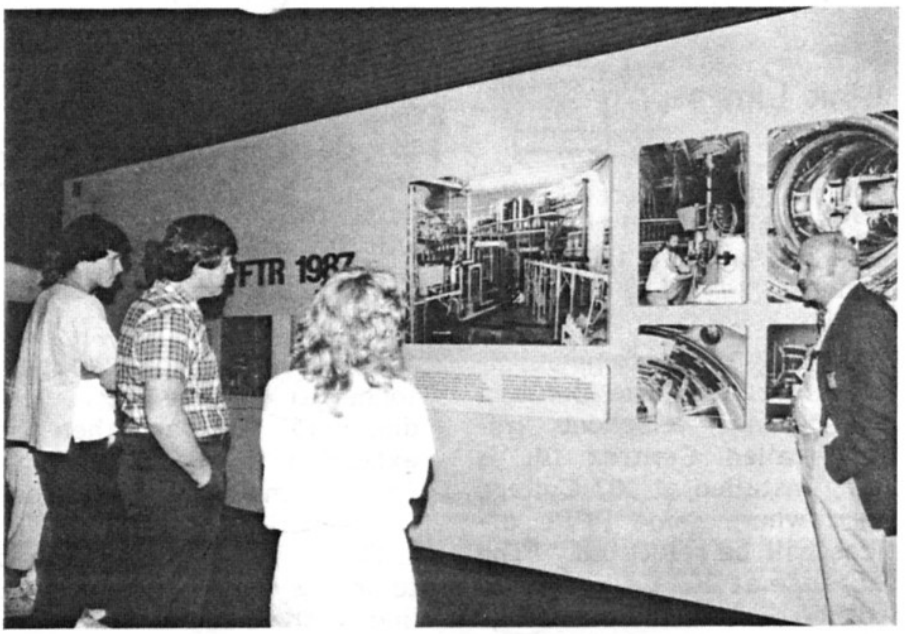


Veteran volunteer guide George Martin (right) talks about the TFTR to a group of visitors.

merizing magician of liquid nitrogen. He said the most frequently asked question is--when can we expect to have a useful application of magnetic fusion energy for all mankind?

Mathematician Lee Ratzan volunteered to be a tour guide after enjoying his role during the recent Open House. He found that visitors of all ages have questions, ranging from the differences between fusion and fission to how superconductivity relates to fusion.

"I emphasize how our efforts here are cooperative endeavors with other people and nations," said Lee. "Sometimes people have the impression we work in isolation."

Magnetic fusion energy will continue to be a topic of great interest, and with tour guides such as George Martin and Lee Ratzan, among the many others, the world of fusion will be understandable to more laypeople.

by Phyllis Rieger

John Doane (second from left) reviews some of the handouts available about the Laboratory and the experimental devices.

Link Lines

How are the numbers 683 and 243 related? They'll both soon be links to reach PPPL personnel.

According to Telecommunications Mgr. Marjorie Barnett, an upgraded telephone system, called Centrex III, is being installed at 307 College Road where some PPPL offices will be relocated. "The exchange at 307 College Road will be 243 instead of 683," said Marjorie. "Outside callers must dial 243 first, then the extension. This is for the 307 location only. However, once Centrex III is also installed at C/D-Site, the exchange for all will change from 683 to 243. Installation should be completed by the end of this year," said Marjorie. She emphasized calls within PPPL, whether C/D-Site or 307 still require dialing only the four digit extension number.

In case someone dials 683 instead of 243 to reach personnel at the 307 offices, the call will be intercepted and the caller will reach the PPPL receptionist at 683-2000.

Marjorie also explained personnel at College Road must dial 9-452 first and then the extension to reach the University's main campus. When Centrex III is installed at C/D-Site, all will dial 7 or 5 to access the main campus tie lines. The Federal Telephone Service (FTS) access remains the same. Pagers will operate the same.

All are advised to keep these number changes in mind, especially when ordering business cards.

Who's New ?

Don Abramowitz, PPPL's new industrial hygienist.

Don Abramowitz joined the Laboratory in May as PPPL's new industrial hygienist in the Occupational Safety Branch.

(continued)

Don will be working to help ensure that the PPPL work environment is a healthful one. He will use his expertise in many areas, including the safe handling of chemicals, evaluation of noise, and working with asbestos.

Don has a Masters Degree in Environmental Health Sciences from the Harvard School of Public Health, and worked with the Occupational Safety and Health Administration, OSHA, for seven years before joining the Laboratory.

Employees can contact Don at the Occupation Medicine and Safety Building, C-Site, ext. 3584.

Special Seminar

The Secretarial and Office Support Staff Organization will sponsor a special seminar Thursday, July 30 at 11:30 a.m. in the MBG Auditorium.

"Personal Assault Crime: Avoidance and Survival," will be presented by Vonnie Weiner. Vonnie is a professional speaker with Citizens Against Crime.

While the topic is a serious one, the program is entertaining as well as informative. Please try to attend.

Visa/Passport Photos

The Photo Lab takes passport and visa photos for employees each Wednesday morning from 8:30 to 9:00.

Employees should notify the Lab, ext. 2090, no later than the day before, so that scheduling can be arranged.

Computer Corner

It seems as though almost everyone at PPPL has a Personal Computer (PC), has access to one, or is getting one. Therefore, it is necessary that everyone, not just the computer jocks, be aware of issues and concerns regarding "computer security." Accordingly, a series of short articles on computer security will appear in the HOTLINE over the next several months. Topics to be discussed include:

- Computer security and the law.
- PPPL computer security organization and documentation.
- Overview of current policy and practices regarding computer security at the Laboratory.
- "Did you know" tips for PC users.
- The password controversy.

If you have any questions about computer security or PPPL practices and policies concerning computer security, or if you have suggestions for topics to discuss, please contact Dori Barnes, ext. 2557 or Carl Scimeca, ext. 3260.

Mac Courses Offered

Now that Macintosh computers are commonplace at PPPL, users who want to get more out of their machines will be happy to hear about informal courses being offered around the Laboratory in various Mac-related subjects.

For the new Mac user, Andy Soccio's introductory course will help you get off to a fast start. For information, call Andy S. on ext. 3273.

Users (and would-be users) of the versatile MacDraw program can become experts in five easy lessons with Andy Baird's MacDraw Course. It covers basics as well as advance techniques and introduces many shortcuts. For information, call Andy B. on ext. 2792.

Spreadsheet users will be interested in a new course which introduces Microsoft's powerful Excel program. For information, call Andy B.

Finally, if you would like to have courses in Mac-related software that are not mentioned here, such as Microsoft Word, Versaterm, Minicad, SuperPaint, Lightspeed Pascal, etc., let Andy B. know. If enough people are interested, and a qualified instructor can be found, something will be arranged.

Speaking of instructors, if you would like to teach your favorite Mac application, please call Andy B. Good instructors are always needed!

Lost Medallion Sought

The U.S. Department of Energy medallion on the 1985 Disadvantaged Business Achievement Award plaque presented to PPPL recently came loose and is lost. The plaque hangs at the main entrance to Mod I, just before you enter the Procurement Offices.

If you find the medallion, please return it to Roger Gould, Mod I, C-Site.

Security Checkpoints

It is Laboratory policy that all persons on PPPL property wear identification badges.

The wearing of an I.D. badge is only one part of the total security system, but it is an important part, especially at this time when some employees and their property are being relocated from one site to another.

Employees who misplace or forget their I.D. badges should obtain a temporary badge from the Public Safety Communications Desk at C-Site. Temporary badges are issued on a daily basis and MUST be returned daily. Personnel who lose their I.D. badges should obtain a replacement badge, without delay, from the Public Safety Department Office at the Chemical Science Building, B-Site.

Visitors are required to obtain Visitor Badges from the Security Officer at the Security Booth.

It would be extremely helpful if employees would give advance notice of an expected visit to the Security Officer at the Security Booth (ext. 2534). Same day notifications are fine, except for large groups. For large groups, call Information Services (ext. 2750) at least two weeks in advance to make arrangements.

Visitor badges are to be returned to the Security Booth upon leaving PPPL.

Questions regarding identification and/or visitor badges should be directed to the Department of Public Safety (ext. 2895).

For Sale

Blue/green/cream striped velvet sofa with three cushions. Very good condition. Asking $200. Call T. Reef at (609) 395-7085.

Three cream-colored, marble-topped tables: Two end tables (square with drawers) and one cocktail table (65 inches long). Excellent condition. Asking $200. Call T. Reef at (609) 395-7085.

1977 BMW 320i. Excellent condition. Call Tom Carroll, evenings, at 737-0232.

The **Procurement Division** moved to the newly renovated Module I at C-Site. Telephone extensions remain the same.

Performance Measurement System (PMS) Personnel moved to the third floor of the LOB. Telephone extensions remain the same.

Safety Training Courses

The Occupational Safety Branch has scheduled the following safety training courses for August:

Course	Date/Time/Location
Ladder Safety	11 August 1:30-2:30 p.m. TFTR Training Trailer, D41-5
Lockout/Tagout Procedures	13 August 1:30-3:00 p.m. Safety Training Trailer
Portable Power Tools	18 August 1:30-2:30 p.m. Safety Training Trailer
Proper Use of Fire Extinguisher	25 August 9:00-10:30 a.m. Safety Training Trailer

Employees must obtain permission from their immediate supervisor to attend these classes. Supervisors should call Mary Ann McBride at ext. 3468 to enroll their employees.

Basic Safety Orientation for new employees is offered every Monday beginning at 8:30 a.m. in the Safety Training Trailer.

The PPPL HOTLINE is issued by the Princeton University Plasma Physics Laboratory, a research facility supported by the United States Department of Energy. Correspondence should be directed to PPPL Information Services, B380, C-Site, James Forrestal Campus, ext. 2754.

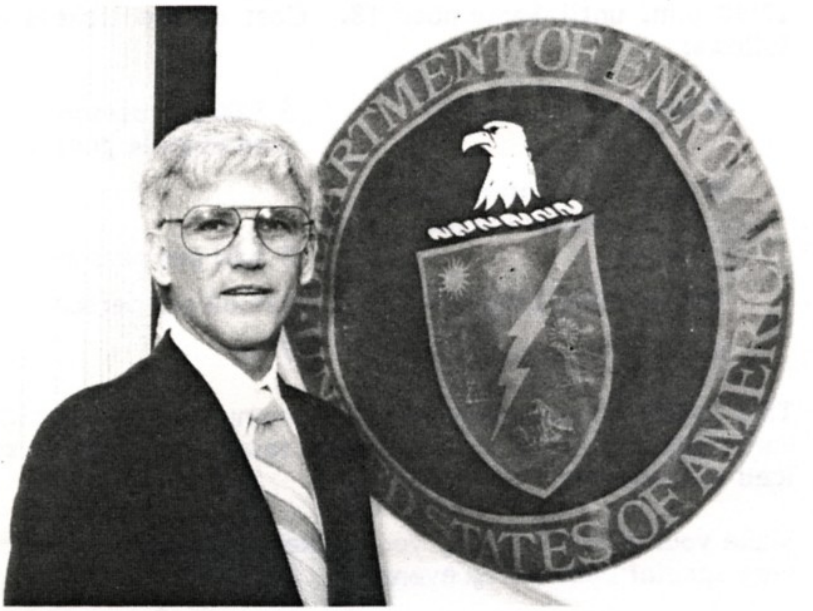
PPPL
PRINCETON PLASMA PHYSICS LABORATORY

HOTLINE

Vol. 8, No. 20 August 5, 1987

An Interview with Milt Johnson

FORGING FUSION'S FUTURE



Milt Johnson, the newly appointed Princeton Area Manager.

Partnership, communication, commitment: these are three of the words Dr. Milton Johnson uses to describe the rather unique relationship among the U.S. Department of Energy (DOE), the Laboratory, and the University.

Since July 5, Milt (as he is called) is the newly appointed Area Manager for DOE's Princeton Area Office. In the short time he's served as Area Manager, the Office of Energy Research of DOE has performed its first on-site institutional plan review of PPPL. This review allowed PPPL Director Dr. Harold Furth and other senior PPPL managers to outline their 15-year plan for the Laboratory.

According to Milt, "The review focused on institutional issues and long-range plans, and provided an opportunity for open and frank discussions by all the partners." In addition to describing the 15-year program, there were discussions on TFTR and CIT and how they supported the Lab's and DOE's long-range plans. The DOE has encouraged this longer view which would encompass planning and building experimental devices to address fusion development problems into the first decade of the next century.

All the DOE reviewers, including Jim Decker, Acting Director of the Office of Energy Research, commended the Laboratory for the progress in the fusion research program and for effective implementation of the move out of A and B Sites.

Milt emphasized the Laboratory's excellent job of identifying and discussing long-range issues. "I was particularly encouraged by the DOE's willingness to consider the Laboratory's proposal for a new fusion engineering building at C-Site to house staff members who will be temporarily moved to off-site leased space on College Road East. Consideration of this new facility by both DOE and Princeton University emphasizes the long-term relationship recently supported by the agreement between DOE and the University to lease the land at C/D Sites for 40 years," he said.

For almost a year, Milt served as Acting Area Manager for the Princeton Area Office. Now as Area Manager, he said, "I currently have no special plans except to continue the good communication and cooperation which has existed among the Department, the Laboratory, and the University."

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PPPL PICNIC TICKET SALES TO BEGIN AUGUST 17. SEE PAGE 2 FOR DETAILS.

Milt Johnson
(continued)

The Princeton Area Offices are located on the second floor of the LOB. Milt explained, "It is unique for the offices to be on a laboratory's site. Our main role involves overseeing the provisions of the DOE-University contract, primarily in the business area of the Laboratory's operation. But, we also are responsible for monitoring the progress of the technical programs and we maintain a staff on site with expertise ranging from accounting and contracting to physics and engineering. We also employ a nuclear safety officer. We plan to hire two additional employees to staff the new CIT Project Office, which will be responsible to me."

Milt, who has been assigned to the Princeton Area Office since 1980, is a Plainsboro resident. He complimented the Laboratory and University for their "good neighbor" policy, saying, "I feel the Laboratory and University do an outstanding job of fostering positive community relations with the neighboring municipalities and residents. Helping others to understand our work here is a step forward for fusion."

OBITUARY

A. Donald Hay died on June 7. Don, who retired in 1983, was a Senior Engineer in the Mechanical Engineering Division of the Engineering Department.

Don is survived by his wife, Norma; a daughter, Alice; and a son, John.

Memorial contributions may be made to the Princeton First Aid and Rescue Squad.

SIX FLAGS Great Adventure

PICNIC TICKETS GO ON SALE!

Attention everyone! Tickets for the PPPL Annual Picnic being held at Great Adventure Amusement Park on September 26 go on sale August 17 at the Petty Cash Office, Module II, on Monday-Wednesday-Friday from 11:30 a.m. to 12:30 p.m. until September 18. Cost of the tickets is as follows:

● PPPL Employee	$ 7.00 per person and eligible guests
● Great Adventure Season Pass Holder (picnic only)	$ 3.00 per person
● Non-PPPL Employee	$20.00 per person
● Children under 3	Free

This year's all-you-can-eat picnic menu includes hot dogs, hamburgers, potato salad, tossed salad, ice cream, soda, iced tea, and beer.

Make your plans now, buy your tickets early, and attend this very special Laboratory event.

A special thank you is extended to PPPL Social Committee members Tony Bleach, Mary Ann Brown, Angelo Candelori, Fred Dylla, Elmer Fredd, Dinah Larsen, Susan Murphy, Martha Redi, Barbara Sarfaty, and Jim Taylor for the many hours spent making this upcoming event possible.

Corporate College Program

Local Corporate College Program Makes Attending Class Easy.

Courses in management and accounting, leading either to a degree or a certificate program, are offered locally by Middlesex County College.

"The courses are part of Middlesex's 'Corporate College' program initiated several years ago to meet the needs of employees who work at area businesses and who want to continue their education," said Bill Johnson, Manager of Employee Relations, Training, and Development.

This fall Principles of Supervision and Business and Industrial Psychology will be offered for those interested and qualified to participate in the program. Classes begin September 8 and conclude December 18.

Principles of Supervision will meet on Tuesdays from 5:30

(continued)

to 8:20 p.m. at the Gatehouse, Princeton Forrestal Village, near the new Marriott Hotel.

Business and Industrial Psychology will meet on Thursday from 5:15 to 7:55 p.m. at the FMC Corporation on Route 1 at Plainsboro Road.

According to Bill, the courses are part of a curriculum leading to an Associate of Science degree in Management or Accounting. Credits earned for the two-year degree can be transferred to four-year programs at state colleges and to other schools, based on information received by Bill from Middlesex County College officials.

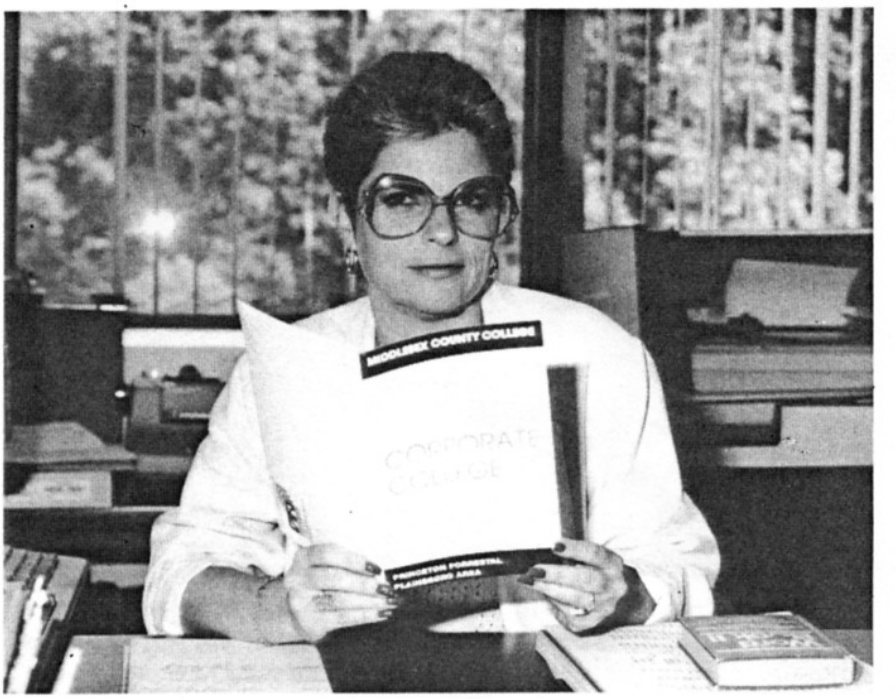
Courses offered over the last several years included accounting, basic computer programming, business law, and economics.

Course registration fees are $40.25 per credit hour. Each of the courses offered this fall are three credit-hour courses and will cost $120.75 to enroll. Cost for books is additional.

Employees may qualify for financial assistance either through the Tuition Rebate Program for nonexempt employees or the Education Loan Program for exempt employees.

Employees interested in obtaining additional information about the Corporate College program should call Bill in Personnel at Ext. 2052.

Famous Americans celebrating birthdays in August include: Odie (Garfield's sidekick), Dustin Hoffman, Leonard Bernstein, and Valerie Harper.



Barbara Sobel, Executive Secretary to the Associate Director for Research, has taken advantage of the "Corporate College" program. She said, "The fact that the courses are offered right next door and that they start immediately after work are the two main advantages. I was able to attend the classes and still be home with my family in the evening."

Employees Honored for 25 Years of Service

Princeton University recently recognized fourteen PPPL employees who had completed 25 years of service this past June. They are Frank Anderson, Frank Bernath, John Boychuk, Charles Bushnell, Elizabeth Cary, Lawrence Corl, Joseph Dolobacs, Steven Duritt, Jr., John Gumbas, Claude Schad, Roland Snead, Alfred Toth, Richard Yager, and Shoichi Yoshikawa.

Each honoree was invited to a special reception hosted by Princeton University and each will receive a captain's chair with a replica of the Princeton seal and an inscribed bronze plate in recognition for their service.

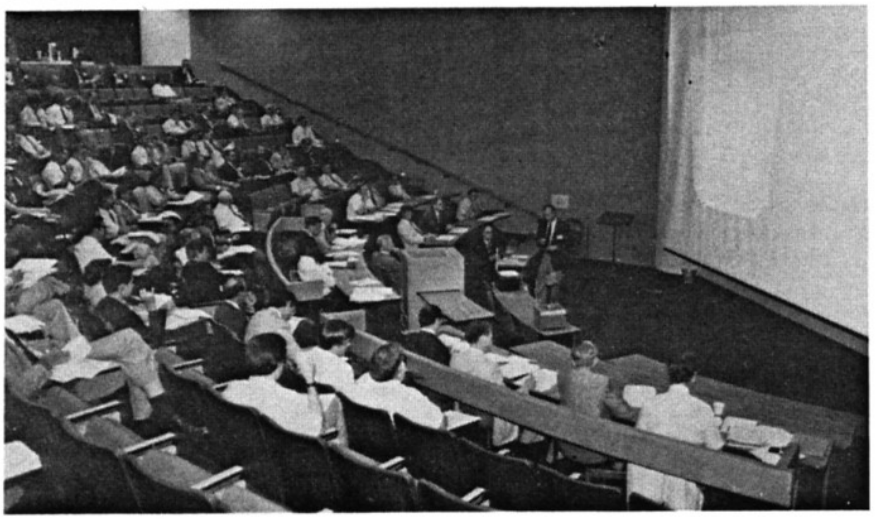
HEALTH QUEST

Over 35? Odds are you have periodontitis -- gum disease -- warns the National Institute of Dental Research.

Periodontitis destroys the supporting structures of your teeth. It begins when bacteria form a thin tissue around teeth and then accumulate in the nooks and crannies caused by tartar buildup. This allows the bacteria to penetrate into the gums, destroying the tooth-supporting bones.

What's the best way to prevent periodontitis? Dentists recommend routine brushing, daily flossing, and regular dental checkups.

CIT SEMINAR



Attendees representing 58 companies came from as far away as California and Ontario, Canada to attend the Compact Ignition Tokamak (CIT) Industrial Involvement Seminar hosted by PPPL on July 23. The seminar explained to private industry representatives the opportunities available for suppling services and materials in support of the CIT Project.

Meeting Calendar

September

01-11	**Course and Workshop on Physics of Mirrors, Reversed Field Pinches, and Compact Tori,** Varenna, Italy. Contact: Professor E. Sindoni, International School of Plasma Physics, 16 via Celoria, I-20133 Milan, Italy.
09-11	**9th International Colloquium on UV and X-Ray Spectroscopy of Astrophysical and Laboratory Plasmas,** Beaulieu-sur-Mer, France. Contact: Mr. Bely-Dubau, Observatoire de Nice, B.P. 139, F-06003 Nice Cedex, France.
20-23	**12th Conference on the Numerical Simulation of Plasmas,** San Francisco, CA. Contact: Ms. Donna Crew, Conference Administrator, Lawrence Livermore National Laboratory, P.O. Box 5509, L-561, Livermore, CA 94550.
21-25	**10th International Conference on Magnet Technology,** Boston, Massachusetts. Contact: MT-10 Conference Committee, MIT Plasma Fusion Center, NW17-203, Cambridge, MA 02139.
21-25	**Tritium Safe Handling Course,** Toronto and Chalk River, Ontario, Canada. Contact: Mr. R. Stasko, Canadian Fusion Fuels Technology Project, 2700 Lakeshore Road West, Mississauga, Ontario, L5J 1K3, Canada.
28 Sept-02 Oct	**6th Topical Conference on Atomic Processes in Plasmas,** Santa Fe, New Mexico. Contact: The American Physical Society, 335 East 45th Street, New York, NY 10017.

More comprehensive meeting listings may be found in Nuclear Fusion, Physics Today, IEEE Spectrum, and Communications of the ACM.

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TRANSITIONS

Births

The HOTLINE offers its congratulations to the following employees, who recently became proud parents:

Alan Upperco of the Budget and Planning Office and his wife, Janet, whose daughter, Karen Elizabeth, was born May 12.

David Voorhees of the X-Ray Laser Project and his wife, Karen, whose son, Garret, was born June 17.

Retirees

The HOTLINE wishes the best to the following recent PPPL retirees:

Harold Eubank after twenty-eight years of service. Hal was the Head of the Neutral Beams Division of the TFTR Project and the Neutral Beam Branch of the Experimental Division.

Americo Mariconi after twelve years of service. Mark was a janitor in the Administration Department.

Robert Mills after fourty-four years of service. Bob was founder of the PPPL Engineering Department and its head until 1983. He established the Plasma Science and Fusion Reactor Technology graduate program in the Chemical Engineering Department.

John Murphy after twelve years of service. John was the Head of the Accounting and Financial Controls Division in the Administration Department.

Theodore Thome after twenty one years of service. Bob was a lead boiler operator in the Administration Department.

PPPL
PRINCETON PLASMA PHYSICS LABORATORY
HOTLINE

Vol. 8, No. 21 September 4, 1987

FALL SCHEDULE OF EDP-SPONSORED COURSES OFFERED

Registration for the fall schedule of courses offered as part of the Employee Development Program (EDP) begins with the distribution, over the next few days, of class offerings and schedules. Classes will begin the week of September 21.

Nine full-term courses as well as a number of short courses will be offered. Full-term courses include mathematics, written composition, introduction to accounting, and technical courses such as Feedback Control Systems, Finite Element Analysis, Analog Circuits, and Power Systems. The majority of the courses are offered through Mercer County Community College and earn continuing education units upon completion of the course.

Short courses, ranging from several hours to several days, include classes offered in conjunction with the Laboratory's Guided Learning Center. Other short courses focus on increasing the application of other computers and software, as well as technical courses on specialized subjects.

According to Bill Johnson, Manager of Employee Relations and Manpower Development, the brochure will contain information about the program and an enrollment form.

"We are asking employees to list their first and subsequent preferences in enrolling for courses," Bill said. "Because of the anticipated interest, participants will be allowed to sign up for one full-term course. Registration will require supervisor approval," he added.

According to Bill, registration forms must be returned by September 11.

The Employee Development Program is designed to respond to a need for training PPPL employees as identified by the Employee Opinion Survey conducted last year. The courses are free to employees. Registration, books, and other fees are paid by the Laboratory.

Bloodmobile Visits Lab Sept. 10 Donors Needed

The Bloodmobile, operated by the American Red Cross, will be at PPPL September 10 from 10:00 a.m. to 3:15 p.m. The annual visit will be to Sayre Hall Auditorium at B-Site.

Rosemary Fuccello, Personnel Services Administrator and Coordinator for this year's blood drive, stresses the importance of being a donor. "Because we participate in the blood bank program all PPPL staff, working half time or more, are automatically covered under the Group Blood Program," Ro said. "The University must meet a yearly quota of blood donations to continue to offer this benefit," she explained.

Those wishing to donate blood should contact Ro at Ext. 2041 to schedule an appointment. Donors will be scheduled every 15 minutes to facilitate scheduling.

Ro said, "refreshments will be served." She added, "it isn't necessary for donors to go without breakfast or lunch."

Additionally, forms have been circulated to all employees which permit donations to be made at the Princeton Medical Center. "These will still be credited towards the University's group quota, and it may be more convenient for some employees to give blood there," she said.

BUY YOUR PICNIC TICKETS SOON. LAST DAY TO PURCHASE IS SEPTEMBER 18.

"Stores Galore" Princeton Forrestal Village Opens

There's good news if you're the type of person who likes to run some errands during your lunchtime or one who defines entertainment as shopping. Princeton Forrestal Village, the new retail/office/hotel development located diagonally across from PPPL on Route 1, officially opens on Thursday, September 17th.

The almost 400,000 square foot mall-type Village, a project of Toombs Development Company, will offer a wide variety of specialty shops ranging from an auto-related gift store to a sunglass hut. The almost 100-store complex includes Hallmark cards, Larmon Photo, New Method Cleaners, a drugstore, and a florist. There are several clothing stores catering to men, women, and children, with stores specializing in maternity, European and Victorian wear.

If you're hungry, there are several restaurants and food stands. You have your choice of Chinese, Italian, Mexican, seafood, turkey, deli, donut, muffin or steak and sub. Dessert lovers will find the Swiss chocolate shop and ice cream stores appealing. Additionally, the Village includes a Marriott Hotel which will have four restaurants including a Japanese steak house.

According to Village spokesperson Andrea Dudas, the Village will celebrate its opening on Constitution Day with a parade at 11:00 a.m. Later in the evening, beginning at 7:00 p.m., the New Jersey Pops will entertain and fireworks at 8:30 p.m. being the brilliant ending to the grand opening day.

Friday, September 18 at noon, there will be a musical group presentation with Miss Cissy Houston and orchestra performing at 7:00 p.m.

Ms. Dudas said store hours will vary but stores must be open from 10:00 a.m. to 7:00 p.m.

The next day, beginning at 1:00 p.m., performers from the 50's and 60's make Saturday sizzling and scintillating as they entertain. Groups include the Marvelletes, the Dovells, and Bobby Lewis.

Safety Training Courses

The Occupational Safety Branch has scheduled the following safety training courses for September:

Course	Date/Time/Location
ASC Training/Meeting (Mandatory for all ASCs)	09 Sept, 9:00-10:00 a.m. LOB Auditorium
Respiratory Protection	10 Sept, 2:00-4:00 p.m. Safety Training Trailer
Radiation Safety Training	15-17 Sept, 8:30 a.m.-12:00 noon D-Site Training Trailer (D41-5)
Proper Use of Fire Extinguishers	22 Sept, 1:00-2:30 p.m. Safety Training Trailer
ASC Training/Meeting (Alternate Date)	23 Sept, 2:00-3:00 p.m. LOB Auditorium
PCB Handling	29 Sept, 1:00-2:30 p.m. Safety Training Trailer

Employees must obtain permission from their immediate supervisor to attend these clas ses. Supervisors should call Mary Ann McBride at ext. 3468 to enroll their employees.

Basic Safety Orientation for new employees is offered every Monday beginning at 8:30 a.m. in the Safety Training Trailer.

Obituary

On August 9, **June Hyman** died after a brief illness. She had been an employee at PPPL since 1981. At the time of her death, June was supervisor of the Inventory Control Section in the Materiel Control Office, Administrative Department.

June is survived by her daughter, Sakeenah Hafina Williams, her parents, John and Katie Hyman, and six brothers and two sisters.

A memorial fund has been established for June's daughter, and according to Benefits Administrator Bobbie Cruser, donations are still being collected.

"To date, $700 has been received. Employees wishing to make contributions should contact me (Ext. 2101) or Joyce Bitzer (Ext. 2714)," Bobbie said.

"I know there are others who are considering contributing to the fund we have established for Sakeenah. It's important they contact us so that we may include their contribution," she said.

PPPL PICNIC TICKET SALES CONTINUE UNTIL SEPTEMBER 1

PPPL
PRINCETON PLASMA PHYSICS LABORATORY
HOTLINE

Vol. 8, No. 22 September 28, 1987

Energy Update:

ENERGY CONSERVATION WORKS AT PPPL

According to the PPPL Energy Management Team and the Department of Energy (DOE), the Laboratory continues to be a winner in its battle to conserve energy and reduce energy-related costs. This was officially recognized earlier this year by Herb Mix, Chief of the Engineering and Safety Facilities Branch in DOE's Princeton Area Office, in a letter to Bob Smart, PPPL's General Manager of Facilities.

In his letter, Herb noted that "as compared with all other sites under Chicago Operations Office management, Princeton Plasma Physics Laboratory's efforts toward energy conservation have been exemplary. The resulting 50% reduction in building energy use for the FY1975-FY1985 comparison period is to be commended."

Bob said, "It is very gratifying to receive this praise for the Laboratory. These results are direct evidence that our In-House Energy Management Plan is a good one, it's on track, and it's working! The plan's success reflects the full commitment and support received from all levels of management and the cooperation and hard work of the Laboratory staff."

Until recently, all government agencies measured energy consumption against a 1975 "Base Year." Under this DOE-wide energy conservation program, PPPL was required to reduce the average building energy consumption per unit of space (BTU/FT^2) in existing buildings by 20% and reduce petroleum-based fuels consumption (fuel oil) by 30%. PPPL did very well. The Laboratory not only met, but exceeded DOE directives shown in Table I.

However, in 1985, a new 10-year energy conservation program with a new base year (FY85) was initiated by DOE. PPPL is currently in the second year of this program, which calls for an energy reduction of 10% in three areas: buildings, experimental operations, and vehicle and transportation. "PPPL can no longer rest on its outstanding accomplishments of the 1975-85 decade. The clock has been reset. However, I fully

(continued)

PPPL's Energy Management Team: Standing are (left to right) Bob Smart, Jim Clark, Rich Pfeifer. Sitting are (left to right) Bob Gulay and Connie Stout. Dick Rossi was not available at the time of the photo.

(continued)
expect the Laboratory will meet and exceed these new goals, just as it did in the past," Bob said.

According to Connie Stout, Head of Plant Maintenance and Engineering, "We're off to a good start. Several major accomplishments were realized in FY86. When converted into BTU/FT^2, all buildings energy usage showed a 4.9% reduction. This 4.9% reduction means that PPPL is well on its way toward achieving the buildings energy reduction goal of 10% by 1995."

Rich Pfeifer and Bob Gulay echoed Connie's feelings saying, "considering that experimental operations' electric consumption increased by 37% in FY86 (due to increased machine operations) and that buildings' energy consumption tends to 'typically' parallel experimental operations, the 4.9% reduction in buildings' energy usage was most rewarding."

While PPPL's total experimental operations' energy usage increased by 37%, this number is a bit misleading considering the increased level of experimental activity. Without the major continuing efforts by personnel in operation areas, the increase would have been much greater.

Another area to see a major decrease in energy consumption in FY86 was the vehicle and transportation area. Prudent assignment, control, and management resulted in a 19.8% decrease in gasoline fuel consumption.

Translated into dollars and coupled with a PSE&G Interruptible Electric Service contract credit, these statistics represent a FY86 savings to the Laboratory as shown in Table II.

According to Bob Smart, "these realized energy savings help the Laboratory maintain its momentum in achieving its scientific mission by making these dollars available to Laboratory experimental and research activities, rather than have them lost to utility bills."

"As you can see," commented Jim Clark, PPPL's Deputy Director of Administration Operations, "employee support of energy conservation projects is having a very significant impact in redirecting funds from utility bills to other programmatic use. This strong support assures that these energy savings are not lost and that they will continue to increase in the future. As we succeed, our research and experimental programs reap the benefits."

Energy Awareness Month will be observed at PPPL during October. The "official" Energy Awareness Month was established by the Department of Energy to encourage the development of America's energy resources, technologies, and conservation habits. In keeping with this spirit, all employees are urged to continue their "extra effort" in making energy conservation work at PPPL.

Table I. Energy Reduction Goals and Results for FY75-FY85.

Energy Usage	PPPL Bldgs FY75	PPPL Bldgs FY85	Energy Reduction Goal	Energy Reduction Realized
Energy Consumption (10^3)(BTU/FT^2)	1,232	620	-20%	-49.7%
Fuel Oil Consumption (kgal)	661	336	-30%	-49.1%

Table II. Energy Cost Savings in FY86.

Electric	$ 105,000
Fuel Oil	$ 16,000
PSE&G Interruptible Service Contract	$1,007,400

(Note: These figures do not reflect a yearly savings of approximately $1,000,000 due to energy conservation projects already in place prior to FY86.)

Employee Recognition Program Begins

"The Laboratory Council has given the go-ahead to Administrative Operations to test a Pilot Employee Recognition Program for one year," announced Jim Clark, Deputy Director for Administrative Operations. The program, which formally begins in September, will allow the Laboratory to recognize and reward employees or teams of employees who demonstrate a high level of contribution and achievement.

"Administrative Operations is very enthusiastic about being able to test this Program," Clark said. The idea was first proposed during R. Rossi's Administration Department dialogue meetings in October 1986, and was further supported by the ORC Attitude Survey results received in November. In fact, the ORC Task Force is addressing the issue of employee recognition as part of its agenda.

Who's Eligible

All full-time PPPL Administrative Operations employees below the position of Branch Head are eligible. Employees or teams of employees who have demonstrated a high level of achievement and contribution can be nominated by Branch or Division Heads. Nominees will be placed in one of three staff classifications (Lab and Shop, Office and Support Staff, and Exempt) and evaluated by a peer panel based on the following criteria: initiative, scope of accomplishment, merit, and application.

Selections

A "peer panel" composed of employees from a nominee's staff classification will evaluate the nominees using a point score evaluation system and select winners twice a year. Division Heads will appoint panel members once a year, with rotation among Divisions to insure all areas are equally represented.

Awards

All nominees will receive a memento in recognition of their nomination and contributions to Laboratory operations. The award winners will receive a plaque and certificate denoting their accomplishments. In addition, the Laboratory will also host an annual dinner in their honor and the winners' photographs and a story describing their achievements will appear in the HOTLINE.

If you would like any additional information regarding the Pilot Employee Recognition Program, call Barry Cohen at ext. 2037.

Laboratory Recognized for Laser Development Work

Szymon Suckewer, Head of PPPL's X-Ray Laser Project.

PPPL has been named a recipient of one of Research and Development Magazine's prestigious IR-100 Awards for 1987. Given annually, these awards recognize the laboratories responsible for developing what are considered the 100 most significant technical products of the year.

PPPL received the award this year for its efforts in development of an X-ray laser which operates at a wavelength of 18.2 nanometers in the soft X-ray region of the electromagnetic spectrum.

Development of the laser took nearly ten years: three years of intensive theoretical study by Szymon Suckewer and seven years of developmental and experimental work by a team of scientists and engineers under his direction. The team included Charles Skinner, Ernest Valeo, Alain Wouters, David Voorhees, Howard Milchberg, Chris Kean, and Dong Eon Kim.

Dr. Suckewer accepted the award for the Laboratory at a banquet hosted by Chicago's Museum of Science and Industry.

You Were Heard

One of the ORC Survey response items that was consistent from staff to staff related to the difficulty of employees having access to the Laboratory's Personnel Practices Manual. During the first week of September, over 100 additional Personnel Practices Manuals were distributed to all departments and divisions.

Please check with your supervisor or division secretary to locate the copy which is available for your use. Manuals are to be in open areas for easy access to all employees. Custodians of these manuals will be sent revisions as they occur.

Until Further Notice ...

New Jersey Bell is unable to fulfill their commitment to provide four-digit extension-to-extension dialing to 307 College Road. The engineers are working to resolve the problem.

Until further notice, in order to call a College Road number you must dial 9-243 and the four-digit extension. If you are using a restricted line, dial "O" for operator and she will connect you.

Call the Telecommunications Office, ext. 3435, if you have any problems.

University to Host Bi-weekly Employees' Staff Day

The 15th annual Staff Day will be hosted by Princeton University on October 10th at Jadwin Gym. Staff Day is the University's way of saying thank you for the many contributions of it's bi-weekly staff members.

The day begins early, 9:30 a.m., with an exhibition of crafts by University employees and ice and food sculptures by the Food Services Chefs.

At 11:00 a.m., the all-you-can-eat picnic buffet lunch begins. The University Marching band with the Tiger and Tigress mascots, the cheerleaders, a disc jockey, and a square-dance caller will be on hand to entertain till 1:00 when its on to Palmer Stadium for football! This year's contest is between Princeton and Columbia.

It's not over yet! Winners of the five door prizes will be announced at half time. You need not be present to win, but you must have completed your ticket stub correctly. This means filling in all the blanks and using the employee's name on each stub, including those used by the family members and guests.

Tickets for this gala event will be available October 6th thru October 9th. Employees at 307 College Road can pick up their tickets from Sonja Patterson, Room 41A. Those at C-Site can get theirs at the Receptionist's Desk in the LOB Lobby.

Come and enjoy. Good food. Good friends. Great hospitality. What better way to spend a fall day?

NEW LOCATION

The **Print Shop** has moved to C-Site. It is located directly across from the Photo Lab -- A105. Telephone extensions remain the same.

ANS Accepting Applications

The Northern New Jersey Section of the American Nuclear Society is presently accepting applications for membership. For additional information and application materials call Charles Gentile, ext. 2139.

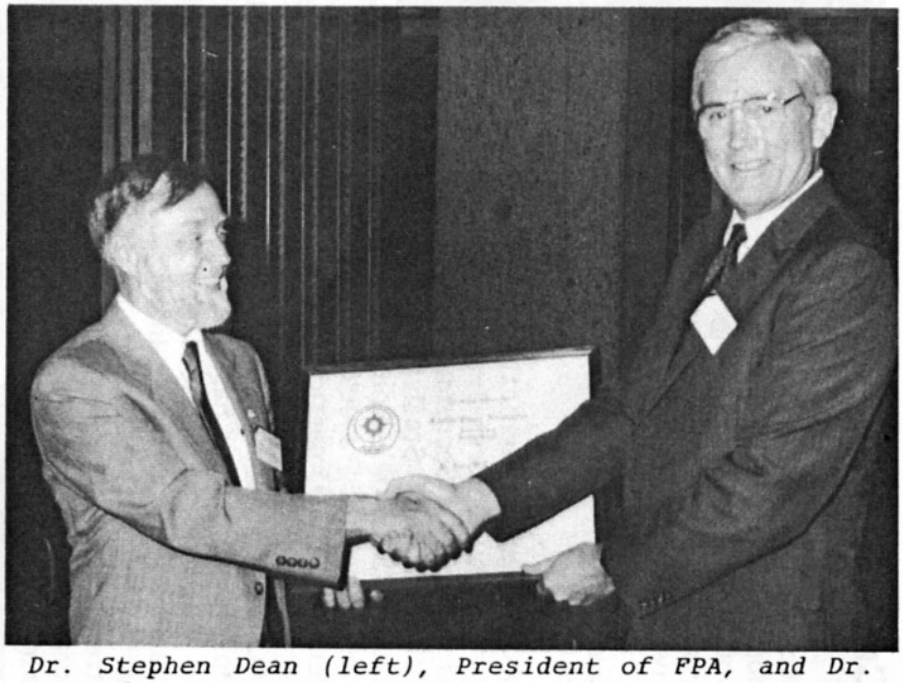
Dr. Trivelpiece (left) and Dr. Spitzer (right).

Dr. Trivelpiece (left) and Dr. Gottlieb (right).

Fusion Power Associates (FPA) presented Distinguished Career Awards to Melvin B. Gottlieb and Lyman Spitzer, Jr. Dr. Spitzer was director of the Laboratory from its inception in 1951 (when it was called Project Matterhorn) until 1961. Dr. Gottlieb was director from 1961 to 1980.

Dr. Alvin W. Trivelpiece, former director of the Office of Energy Research, received a Special Award recognizing his many accomplishments and in appreciation for his role as a founder of FPA.

Fusion Power Associates sponsored the symposium "Fusion Energy and Development: Breakeven and Beyond" at the Laboratory in August.



Dr. Stephen Dean (left), President of FPA, and Dr. Trivelpiece (right).

Crime Story

The audience listens intently to Ms. Weiner as she explains crime prevention techniques that can be used effectively by everyone.

Would you believe a plastic dog dish can help to protect you? It can, according to Vonnie Weiner, a representative of Citizens Against Crime, a group "dedicated to saving lives through self education."

Ms. Weiner's presentation, organized by Dolores Bergmann as part of the Secretarial and Office Support Staff Organization (SOSSO) seminar series, educated, shocked and delighted the 35 participants.

Ms. Weiner reported rape is a violent crime that has reached epidemic proportions and that men are twice as likely as women to be victims of street robbery. She said 90 percent of all shopping center crimes occur in cars, and she urged all to look underneath their cars since criminals appear to lurk there according to recent reports from a nearby mall.

She urged participants to create an illusion. "Buy a large dog dish, put a menacing name on it and keep it outside," she said. A criminal might think you have a dog. She claimed this has proven effective as have "Beware of Dog" signs.

Ms. Vonnie Weiner (left), a volunteer speaker with Citizens Against Crime, is introduced by Dolores Bergmann (right), at a recent SOSSO seminar.

Another effective crime prevention idea is to leave outside lights on all night. Using multiple setting timers to turn the lights off and on is also recommended.

Ms. Weiner emphasized, "Be a risk to criminals. Be prepared. Have a plan. Think ahead to protect yourself."

Seminar organizer Dolores Bergmann felt, "it was a very effective presentation. I know I'm aware of crime prevention techniques I hadn't thought of before."

The Constitution of the United States celebrated its 200th birthday on September 17th. The Preamble to this great document tells of the hopes and dreams for the new nation. The eloquence and clarity of these words have remained undiminished through the years. For those who care to reflect, the Preamble is given below:

We, the people of the United States, in order to form a more perfect Union, establish justice, insure domestic tranquility, provide for the common defense, promote the general welfare, and secure the blessings of liberty to ourselves and our posterity do ordain and establish this Constitution for the United States of America.

Introducing ...

Kim Warnick recently joined Graphic Services where she is involved with the preparation of material used in Laboratory publications, oral presentations, and poster board layouts.

Kimberly Warnick "officially" joined Graphic Services July 1, but actually she's been "on board" since March when she started as an hourly employee while finishing her last semester at Mercer County Community College. Kim graduated in May with an Associate's Degree in Applied Science in Advertising Design.

I have always known I wanted a career in art," Kim said. "I enjoy working with all types of art mediums including airbrush, water colors, colored pencils, pastels, ink, and oils. I especially like to mix the mediums I work with."

A sports enthusiast, Kim has made half of her art studio a home gym so she can "work out." Weather and time permitting she also runs, bicycles, and participates in team sports.

Computer Corner

Did you know that most purchased software and even some free software is copyrighted?

Under the copyright laws, such software cannot be copied, in whole or in part, without the written consent of the author or licensing company, unless such copying is deemed to be in the "normal use" of the software or is to make a backup copy.

This exception does not allow copies to be made to be given to others. However, the original material may be given, loaned, or even sold to others. If you own more than one computer, you may run your software on any of your computers, but you may not copy the software for the purpose of running it simultaneously on more than one of your machines at a time.

Fines for violations of the copyright laws for software are reported to be running from $5,000 to $50,000 per offense.

TRANSITIONS

Births

The HOTLINE offers its congratulations to the following employees, who recently became proud parents:

Fred Dylla of TFTR Operations and his wife, Lillyan, whose daughter, Sarah Lynn, was born August 11.

Jeff Gettelfinger of Tokamak Operations and his wife, Laurie of Security, whose daughter, Amanda, was born August 12.

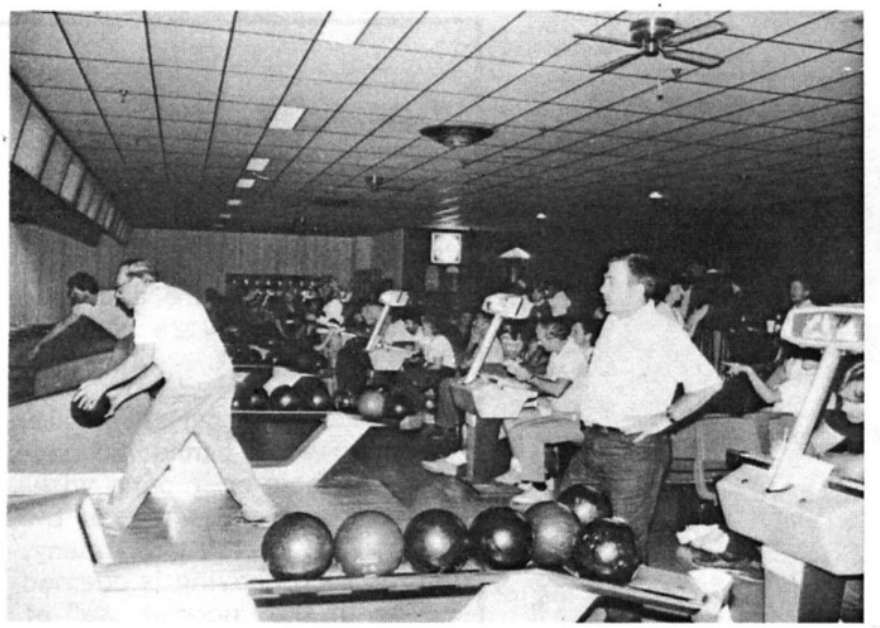
Stephen Paul of the Experimental Division and his wife, Gilda, whose daughter, Jody, was born August 13.

Tom Kozub of PBX and his wife, Janice, whose son, Eric, was born August 29.

Janet Roberts in the TFTR Diagnostics Fusion Products Group and her husband, Michael, whose son, Michael Albert, was born August 29.

Retirees

Francis Dodd after twenty-four years of service. Fran was a Technical Assistant in the MG Section.



Bowling balls began rolling down the alleys as the 1987-88 bowling season got underway September 9 at Colonial Lanes in Lawrenceville. Eight teams of five players each will vie for League championship over the next few months. To find out how you can be a substitute, contact League President Elmer Fredd, ext. 2120, or League Secretary Sarah Thomas, ext. 3711.

PPPL farmers grew a variety of crops this summer. Linda Fahner (from the Photo Lab) spent many relaxing lunch hours working in her plot. She recommends planting marigolds around the garden's perimeter to keep the rabbits out.

TOUR GUIDES

The second quarter of the calendar year saw a significant increase in the number of visitors to PPPL. Sixty-three guides showed 1,577 visitors around the Laboratory. The month of May led the period with 687. We'd like to thank the many volunteer guides who contribute so much to our visitor program.

April

C. Ancher
W. Blanchard
S. Bosch
D. Ciotti
A. Ehrhardt
R. Ellis, Jr.
J. Faunce
H. Feng
G. Gammel
C. Gentile
R. Goldston
R. Hulse
J. Johnson
R. Kaita
M. Kijek
N. Kokatnur
B. LeBlanc
G. Levitsky
T. Luce
G. Martin
T. McGeachen
E. Nieschmidt
M. Norris
E. Perry
S. Schweitzer
I. Zatz

May

C. Ancher
W. Blanchard
N. Bretz
D. Ciotti
A. DeMeo, Jr.
J. Doane
F. Dylla
J. Faunce
H. Feng
R. Gammel
C. Gentile
D. Ignat
G. Levitsky
T. Luce
M. Machalek
G. Martin
D. Meade
E. Nieschmidt
G. Oliaro
L. Ratzan
T. Saito
D. Shoe
J. Sinnis
M. Ulrickson
I. Zatz

June

H. Feng
R. Fleming
G. Gammel
C. Gentile
A. Ilic
N. Kokatnur
G. Levitsky
M. Machalek
G. Martin
E. Nieschmidt
J. Quanci
A. Ramsey
L. Ratzan

PPPL Conference Rooms

Room	Capacity	Contact	Ext.
C-Site			
LOB Auditorium	284	P. Stephens	2750
LOB, 3rd Floor (TFTR) (B318)	40	K. Collins	2202
Director's Conf Rm (B331)*	30	G. Pokrywka	2103
DOE Conf Rm (B252)	30	S. Thomas	3711
PBX Conf Rm (S213)	30	M. Mitas	3100
The Commons (LOB, 2nd Floor)	20	P. Stephens	2750
Theory Conf Rm (A168A)	20	B. Sarfaty	2440
Theory Conf Rm (A168B)	20	B. Sarfaty	2440
Procurement Conf Rm (Mod I, Rm 111)	20	E. Holland	2428
RF Conf Rm (Rm 245)	15	R. Fuchs	3334
Theory Lounge Area (Rm 150)	12	B. Sarfaty	2440
Building 307			
Main Conf Rm (Rm 03)	60	A. McKenzie	3517
Mech Eng Conf Rm (Rm 31)	12	(Temp)	3003

*Subject to Director's need.

Safety Training Courses

The Occupational Safety Branch has scheduled the following safety training courses for October:

Course	Date/Time/Location
Asbestos Handling	06 October, 9:00-11:00 a.m. Safety Training Trailer
Respiratory Protection	07 October, 9:00-11:00 a.m. Safety Training Trailer
Forklift Training	08 October, 8:45 a.m.-12:00 noon Safety Training Trailer
PCB Handling	22 October, 9:00-11:00 a.m. Safety Training Trailer

Employees must obtain permission from their immediate supervisor to attend these classes. Supervisors should call Mary Ann McBride at ext. 3468 to enroll their employees.

Basic Safety Orientation for new employees is offered every Monday afternoon at 1:00 p.m.* in the Safety Training Trailer.

*Note change in time beginning this month.

Blawenburg Band Needs New Members

The oldest band in New Jersey is seeking new members. Established in 1890, the Blawenburg band of New Jersey is looking for people who enjoy playing a musical instrument and would like to be part of a musical group.

The band, which performs at local nursing homes, community events, and other benefits from May to December, rehearses Monday nights from 8:00-9:30. It has a special need for anyone who can play the following instruments: clarinet or bass clarinet; flute; oboe; bassoon; french horn; alto, baritone, or tenor sax; trumpet; trombone. No audition is required to become a member.

So, dust off that musical instrument that has been hiding in the back closet since high school or college. Become part of a group that gives personal enjoyment and brings happiness to others as well. For additional information please call Frank Homan ext. 3087 or (201)-359-5043.

Meeting Calendar

October

04-08	**3rd International Conference on Fusion Reactor Materials,** Karlsruhe, Federal Republic of Germany. Contact: Dr. Karl Ehrlich, Kernforschungszentrum Karlsruhe GmbH, Institute für Material und Festkörperforschung, Postfach 3640, D-7500 Karlsruhe 1, Federal Republic of Germany.
12-16	**12th Symposium on Fusion Engineering,** Monterey, CA. Contact: Mr. Carl D. Henning, Lawrence Livermore National Laboratory, P.O. Box 551, L-644, Livermore, CA 94550.
12-16	**Chapman Conference on Plasma Waves and Instabilities,** Sendai, Japan. Contact: Mr. B. Weaver, AGU, 2 Florida Avenue, N.W., Washington, D.C. 20009.
25-29	**ACM-IEEE Computer Society 1987 Fall Joint Computer Conference,** Dallas, TX. Contact: Cindy Cegelski, Infomart 1950 Stemmons Freeway, Dallas, TX 75207.
26-30	**8th International Workshop on Laser Interaction and Related Plasma Phenomena,** Monterey, CA. Contact: Professor George H. Miley, Fusion Studies Laboratory, University of Illinois, 103 South Goodwin Avenue, Urbana, IL 61801.
27-29	**IAEA Technical Committee Meeting on Research using Small Tokamaks,** Madrid, Spain. Contact: Mr. M. Leiser, Head, Physics Section, Division of Physical and Chemical Sciences, International Atomic Energy Agency, P.O. Box 100, A-1400 Vienna, Austria.
27-30	**34th National Vacuum Symposium,** San Diego, CA. Contact: N. Hammond, American Vacuum Society, 335 East 45th Street, New York, NY 10017.

More comprehensive meeting listings may be found in Nuclear Fusion, Physics Today, IEEE Spectrum, and Communications of the ACM.

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