



# HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

Vol. 1 No. 1

December 18, 1979

## Welcome to The PPL Hotline

The PPL Communications Office is pleased to introduce this new publication designed to inform staff on a more timely basis. The *PPL Hotline* as its name implies, will be issued more frequently than the *PPL News*, which has been discontinued.

The *Hotline* will contain brief, timely notes of general interest in a newsletter format. In the near future, it will be published weekly and supplemented with the publication of a PPL employee feature magazine, issued every other month. In the meantime, the *Hotline* will serve two functions — the presentation of brief notes and announcements and the occasional presentation of longer feature articles.

During fiscal year 80 (which began October 1) the population at PPL will increase by approximately 250. Now, as never before, there is an urgent need for efficient communication. We hope that all PPL staff members will view the *PPL Hotline* as their vehicle for communication.

Information for publication should be sent to:

The *PPL Hotline*  
c/o PPL Communications Office  
Aerolab Building

## Fusion Technology Symposium—Neutral Beam Experiments

Dr. Harold Eubank, Section Head, Neutral Beams, presented the first of a series of fusion technology symposia to PPL professional technical and technical associate staffs on Tuesday, December 11 in Sayre Hall Auditorium. Dr. Eubank's presentation centered on the status of neutral beam experiments on PLT, the use of neutral beams on PDX and TFTR, and the results of neutral beam experiments at Oak Ridge. *cont. on pg. 2*



FUSION IN THEIR FUTURE . . . PPL Director, Mel Gottlieb, and children from the Penrose School in Philadelphia stand before the full-size mock-up of Princeton's Poloidal Divertor Experiment (PDX) which is on indefinite loan to the Franklin Institute. The occasion was the dedication of the Mock-up on Wednesday, November 7, at the Institute which houses a permanent fusion energy exhibit.

## Fusion Symposium *cont. from pg. 1*

Future symposia in the Fusion Technology series will be held on the third Thursday of every month and will feature presentations by national and world experts. Subjects such as progress on the ETF, INTOR, TFTR, TFM and STARFIRE, as well as U.S. and foreign experiments will be covered. The symposia, organized by Dr. Joseph File, are designed to acquaint members of the Technology Department with some of the more advanced, important, and interesting developments in fusion technology at PPL and at other labs in the U.S. and around the world.

## Safety Bulletin

An important safety bulletin was recently issued by H.J. Howe, Jr., Manager, PPL Health and Safety Department, indicating the serious hazards connected with the use of butane cigarette lighters. Should these lighters explode, they release energy equal to that of about three sticks of dynamite. Two fatalities have occurred elsewhere when sparks, generated by welding, burned through the welder's clothing and the butane lighter, causing it to explode.

Because of this danger, the following PPPL policy has been issued: **DISPOSABLE BUTANE LIGHTERS SHALL NOT BE CARRIED ON A PERSON'S BODY WHEN WELDING, BURNING, CUTTING, SOLDERING, ETC. FURTHERMORE, PERSONS IN AN AREA WHERE FLAME AND SPARK-GENERATING ACTIVITIES ARE OCCURRING SHOULD ALSO AVOID CARRYING SUCH LIGHTERS.**

All employees are asked to be aware of the dangers and to comply with the above policy to prevent accidents at the laboratory.

## Secretarial And Office Support Staff Seminars

The Secretarial and Office Support Staff (SOSS) Seminar Committee of PPL is sponsoring a seminar for all office and support staff personnel on Wednesday, December 18 at 11:00 a.m. in Sayre Hall Auditorium. Dr. Melvin B. Gottlieb will be the guest speaker. Additional seminars will be



*Mary Ann Brown (at left) of Research Department Administration, former chairperson of the SOSS Seminar Committee, passes the gavel to newly-elected Chairperson, Bobbie Crusier, Graduate Students Secretary.*

held on the third Tuesday of each month; locations and times will be posted on the bulletin boards.

The Seminar Committee is composed of Mary Ann Brown, past Chairperson, Pam Csira, Ann Golden, Mary Ann McBride, Sara Patterson, Millie Willerton and Ednas Willis. Newly elected officers are Bobbie Crusier, Chairperson; Flo Sciortino, Vice Chairperson; Muriel Strohl, Corresponding Secretary; and Helen Quinn, Recording Secretary.

The purpose of the committee, according to Marianne Weissenburger, its first Chairperson, is "to promote professional seminars on a regular basis where work matters can be discussed, where secretaries can learn something about PPL's organization and about the progress and the future of the laboratory."

The committee urges all secretarial and office support staff to attend these seminars.

Ping Pong Anyone? For details call David Ciotti, ext. 2138.



## Tokamak Fusion Program in China

On December 5th, Drs. Chen Chuen Hsian, Yan Lu-Guang, and Shan Zhi-Lin of the Academia Sinica in the People's Republic of China presented a colloquium on plans for the construction of the largest tokamak in their country. Located at the newly created Institute of Plasma Physics in Hefei (about 250 miles west of Shanghai), An-hui Province, the CT-8 tokamak will have a major radius of 1.86 m and a minor radius of 0.7 m. The device will be constructed with its poloidal field coils outside the D-shaped toroidal field coils. Three stages of operation are planned. During the first stage, toroidal magnetic field strength will reach about 1.5 TL, and plasma current will be about 300 to 400 kA. The first stage will center on studies of a plasma having a large minor radius, impurity control, heating experiments, and equilibrium and stability studies. If neutral beam power is available during this stage, high beta experiments are anticipated. During the second stage, toroidal magnetic field strength will be about 2.5 to 3 TL, with plasma current about 1 to 1.3 MA. The addition of 2 to 5 MW of neutral beam power is expected during the second stage. Plans for third stage operation call for an upgrade of CT-8 parameters based on the device's performance. In addition to the neutral beam studies, scientists at the Institute are planning to experiment with lower hybrid resonance heating (LHRH), ion cyclotron resonance heating (ICRH) and electron cyclotron resonance heating (ECRH). Chinese scientists anticipate the ion temperatures on CT-8 to be about 4-5 keV; densities of about  $5 \times 10^{13} \text{ cm}^{-3}$  or greater and confinement times of about 200 ms are also expected.

Dr. Chen indicated that the CT-8 data acquisition systems will be primitive compared to those in the U.S. The project will use two computers, each about the size of a PDP-11. Diagnostics will also

be less sophisticated than those used in the U.S. programs. Because tokamak development is relatively new in China (discussion of a program began there in 1970), a sizable portion of the project personnel will be drawn from areas other than plasma physics, and will include about 40 scientists and 80 engineers out of a project staff of 400.

Construction of the supporting work for the CT-8 tokamak was begun last year; a first plasma is still four to five years in the future. According to Dr. Chen, obtaining a reliable grid power supply will be a major difficulty. Other problem areas will be procuring components from contractors and construction of the neutral beam systems.

## Fusion Technology Symposia

The second and third symposia in the fusion technology series for professional technical and technical associate staffs are scheduled for this month. On Tuesday, January 15th at 4:00 p.m. Dr. H.O. Wuster, Project Manager of the Joint European Tokamak (JET) will speak on the status of that program. On Thursday, January 17th at 2:00 p.m. a status report on the STARFIRE commercial tokamak reactor study will be presented by Dr. Charles C. Baker, Director of the Fusion Power Program, Argonne National Laboratory. Both presentations will be in Sayre Hall auditorium.

## Energy Contest

The University is sponsoring four Energy Conservation Suggestion Contests throughout the year; the first one started December 6th. Prizes of \$100, \$75 and \$50 savings bonds are being offered for

*cont. on pg. 2*

## Energy Contest *cont. from pg. 1*

original energy conservation ideas that might help the University save energy and money. PPL is participating in the contest, and all employees are eligible. Any ideas specific to PPL or adopted by the Laboratory will be considered for separate PPL prizes. Additional information and entry forms can be obtained by telephoning the Energy Hotline at 7-2-HELP.

## Airport Transportation

Because of the pending gasoline shortage at PPL, Robert D. Smart, Acting Associate Head of Administration Department, has passed along the following information about public transportation serving the area's major airports.

Philadelphia Airport can be reached by taking the train from Princeton Junction to Philadelphia's 30th Street Station and a regularly scheduled shuttle bus from 30th Street to the Airport. Mercer County (Trenton) Airport has scheduled flights to Philadelphia at add-on fares of about \$10.

Newark Airport can be reached by taking the train from Princeton Junction to Newark, and then a shuttle bus to the airport. Shuttles leave Newark Station about every 20 minutes. Princeton Airways provides 15 daily round trips from Princeton Airport to Newark Airport on

## New Publication

PPL Communications Office has issued a new information bulletin entitled *Fusion Power*. This publication, written for a non-technical audience, describes basic fusion reactions, the conditions necessary for fusion to occur, tokamak plasma confinement, and plasma heating. Copies may be obtained from Mary Bersch, ext. 2750.

weekdays and three trips on Sundays. There is no service on Saturdays. The add-on fare is \$6.50 and up; flight time is about 20 minutes. Schedules may be erratic and overbooking is common.

The Salem Airport Limousine offers six trips a day from the Nassau Inn to Newark Airport at about \$10 each way. Travel time is about one and a half hours. JFK Airport is also serviced by Salem Limousine, which departs 2:00 P.M. every day from the Nassau Inn, with arrival at JFK between 4:00 and 4:30. One-way fare is \$17.

Taxis and rental cars are available from Newark and Philadelphia. Typical fares are about \$55 for taxis and \$45 for a rental car.

If public transportation cannot be used, PPL Motor Pool can provide service only if gasoline is available and a driver and vehicle can be scheduled.

## Maternity Benefits

Changes in PPL Blue Cross/Blue Shield coverage have been made to comply with new federal mandates. Under the basic benefit program, the maternity waiting period has been eliminated. In addition, the number of Blue Cross benefit days is now the same for pregnancy as for other general health conditions. Under Rider J, benefits are provided for pregnancy-related X-ray and lab services. The exclusion for pregnancy-related expenses has been eliminated from the major medical program; these expenses are now included under covered medical expenses. These changes are effective as of April 29, 1979. Services for any condition related to the pregnancy of a child dependent are not covered.

## For Sale

ROLEX 18-k gold day-date chronometer. Rolex guarantee --- \$2400 --- (33% discount). Telephone: 683-2410; 799-3378.

Studded Snow Tires H78-14 white walls --- \$50 for the pair. Telephone: 683-2757.

Electric Ceramic Kiln --- fires to 1900<sup>o</sup>, 120V. Firing chamber --- 11"x11"x10" high; glazes, slip, clay included. \$60. Call 683-2752 or 921-2533.

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*The PPL Hotline is issued by the Princeton University Plasma Physics Laboratory, a research facility supported by the U.S. Department of Energy. Correspondence should be directed to PPL Communications Office, Aero Lab, James Forrestal Campus.*

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## ACT-1 Goes On Line

On Friday, August 10, about 100 PPL staff members gathered on the second floor of L-wing at C-Site to celebrate the accomplishment of first plasma on a new PPL small research device called ACT-1 (Advanced Concepts Torus-1). The gathering marked the end of a 2-year effort to design and construct the new machine that now occupies the space of the old L-4 linear device.

ACT-1 is equipped with the ability to generate plasmas using various techniques including electron and ion cyclotron waves, whistler waves, and a tungsten filament discharge. The machine will produce a doughnut-shaped plasma with a major diameter of 118 cm and a minor diameter of 20 cm.

ACT-1 utilizes an aluminum doughnut-shaped vacuum vessel, comprised of 26 identical toroidal-section chambers with large ports offering enormous experimental access to the plasma. The vacuum chamber is water-cooled.

Although ACT-1 has a doughnut-shaped geometry it is not a tokamak. During its initial phase of operation, ACT-1 will use a vertical plasma current to maintain plasma equilibrium. Tokamaks employ a horizontal current, i.e. one flowing around the long way within the plasma doughnut. ACT-1 will produce steady-state rather than the pulsed plasmas of tokamak devices.

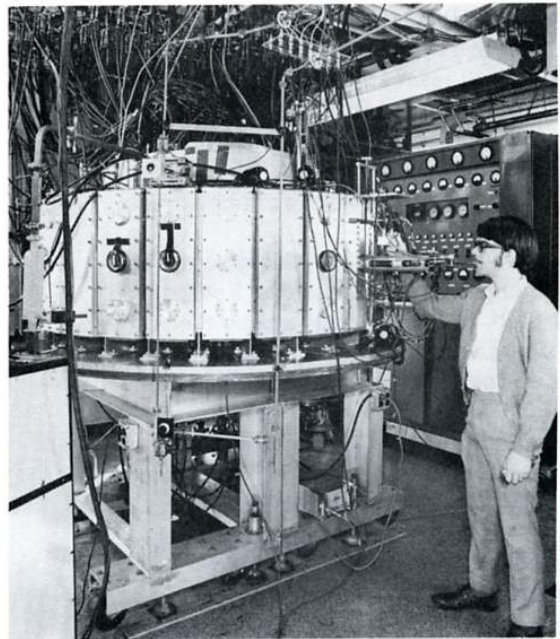
The absence of a horizontally directed (toroidal) plasma current will more readily enable physicists to study plasma currents induced by radio-frequency waves. This work is important in that it could lead to the steady-state operation of a tokamak, which would be advantageous in a fusion power plant.

During the first phase of operation, ACT-1 will also be used for studies of the physical phenomena associated with the various forms of radio-frequency heating, including ion cyclotron resonance and lower hybrid heating.

After about one year of operation in the steady-state mode, ACT-1 will be converted to a tokamak with the addition of a ferrite core.



*Al Drake joined the Laboratory on October 1, 1979 to assume the position of Senior Personnel Recruiter. His experience includes extensive work in recruiting and Equal Employment Opportunity (EEO). Al was previously with the Allstates Engineering Company in Trenton as a Senior Personnel Administrator.*



*Graduate student Randy Wilson adjusts limit positions on diagnostic equipment on the ACT-1 device.*

## Since September

Since the last issue of the *PPL News*, a number of notable events occurred here at the Laboratory.

**Credit Union Changes.** Beginning October 2, 1979 the Princeton University Employees' Federal Credit Union began paying dividends on members' savings from day of deposit to day of withdrawal. Dividends are computed monthly and credited to accounts quarterly. The current annual interest rate is 7%.

**Safety Seminars** for technical shop personnel were conducted by the Employee Relations section of the Personnel department from September through November at the Vacuum Shop, Coil Shop and RF section. The series will continue until all sections have been reached.

**PPL Women's Bowling League** got underway in September. Alleycats, Bouncers, Checkmates and Guttersnipes are the teams that play at Colonial Lanes in Lawrenceville every Wednesday evening. Millie Willerton of the PDX office at C-Site organized the league and serves as Secretary/Treasurer. All PPL women interested in bowling as substitutes should contact Millie on ext. 3100.

**Vacuum Shop Team** won the Forrestral Softball League championship in September by defeating the RF team 15 to 12. RF had edged out PDX to get to the finals. Other teams representing Coil Shop, Storekeepers, Technical Shop and Maintenance rounded out the league. Vacuum Shop retains the trophy until next year.

**Princeton University Golf League** closed the season in October with a banquet at Forsgate Country Club. PPL employees among the season divisional winners were Clarence Bosley, Division B, and William Ernst and Richard Shamon in Division D. Among the playoff champions was Robert Mosley, who, with his teammate, captured first place in the championship flight. Other winners at PPL were Michael Knorr, Henry Bornkamp, Roger Gould, Robert Connolly, Nan Jones, Don Grove and Joseph Perron.

Newly elected officers are Nan Jones, President; Frank Bennett, Secretary; and John Tarnecki, Treasurer. Next season's play starts in May.



*Vacuum shop safety seminar. The speaker is Harry Howe, Jr.; from his left are: William Walker, Joseph Smolinski, Sylvester Vinson, Joseph Bottinelli, Bob Delaney, William Zimmer, John Dolobacs, Fred Simmons, Jr., Tom Ellis, John Swatkoski, and Howard Henry.*



*Vacuum Shop Team. Pictured l. to r., first row: Bubba Vinson, Team Manager, Red Delaney; second row: Walt Ringle, John Wheeler, Dave Mullaney, Charlie Harrison, John Swatkoski, John Dolobacs, Abe Simon; third row: Joe Smolinski, Bob Walls, Mike Mozeleski, Bill Walker, Dan Kungl, Herb Puckett; not pictured: Chuck Johnson.*

## Use Of Government-Owned Vehicles

The Department of Energy (DOE) has issued a memo concerning misuse of government-owned vehicles. Although no specific problems at PPL were noted, we are reminded of the following restrictions: vehicles are to be used for official business only, and no friends or relatives may accompany a DOE or contractor employee, even if the employee is engaged in official business. The 55 miles-per-hour speed limit is not to be exceeded.

Drivers are reminded that courteous and safe operation of these vehicles is essential. Questions concerning vehicle use should be directed to the Transportation Services office, ext. 3108.

## Major Medical Benefits

Because of an increase in the number of Major Medical benefits applications being filed, the PPL personnel department requests that these procedures be followed in filing claims:

Anyone with an open claim should delay submitting Major Medical bills until covered charges of at least \$50 have been incurred.

Employees should not hold their covered bills longer than three or four months.

The employee section of the new application should be completed in its entirety.

Bills should be sorted by type (MD, drug, etc.), and each type of charge should be submitted in chronological order with the oldest bill on top and the newest on the bottom. Each should show the patient's name and the date and type of service or purchase.

Medicare statements should be attached to the appropriate bills.

Base Plan statements should be attached to the appropriate physician or laboratory bills.

Following these procedures should help expedite processing of applications. Anyone unsure of how to proceed is encouraged to contact Eleanor Schmitt at the PPL personnel department before filing a claim.

## C-Site Construction

PPL employees are reminded that construction sites are off-limits to unauthorized staff because of safety considerations and to prevent interference with construction operations. Staff members requiring access for business purposes may contact the Administration Office (AD-3; ext. 2652) for approval and hard hats. *Hotline* will endeavor to keep you posted on construction progress.

## TFTR Group Moves

TFTR *Central Instrumentation Control and Data Acquisition (CICADA)* group became the first PPL employees to occupy their new offices in the East wing of the new lab/office building. In the next few weeks, the TFTR diagnostics group and TFTR headquarters will also make the move.

## Telephone Paging System

A Modax telephone dial interconnect paging system has been installed at PPL. This system enables a voice message to be sent by telephone directly to any PPL pocket radio pager. Operator assistance is no longer required. A directory of paging numbers and further information on this system is available from Mr. McBride, Telephone Manager (ext. 2694).

*PPL Hotline* thanks Sylvester Vinson and Muriel Strohl for articles submitted for this issue.



The PPL Holiday Dinner Dance will be held on Thursday evening, December 20th, at Cedar Gardens. \$12 per person covers dinner and dancing; \$6 for dancing only. Contact Mary Alice Eubank at C-Site or Kate McDermott in personnel for more information. Tickets are on sale through Wednesday, December 19th.

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# HAPPY BIRTHDAY

## PLT! FIRST PLASMA - 12:45 A.M. DECEMBER 20, 1975



101st Year - Pa. 251 - SUNDAY, AUGUST 13, 1978

### U.S. Makes Major Advance in Nuclear Fusion

#### Science nears control of fusion

By DAN FRIEDMAN  
Chairman of Staff  
Twenty-five years ago, Dr. Edward Teller was one of a few Princeton University scientists who predicted nuclear fusion.

#### Fusion device yields heat of 10,000 suns

WASHINGTON (AP) — An experimental fusion device achieved a temperature 10,000 times hotter than the sun in what federal energy officials say is the most significant advance in fusion power.

#### At Innsbruck; Scientists Map Advances in Fusion

Un passo decisivo degli scienziati americani per il controllo della fusione nucleare.

#### Sonние Zeiten für die Menschheit

Energie im Überflus - aus Wasser. Und ohne CO<sub>2</sub>-Emissionen. Amerikanische Wissenschaftler rücken dem Traumziel näher.

#### After 60,000,000° Celsius, what?

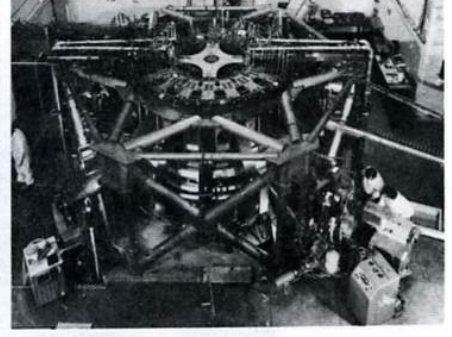
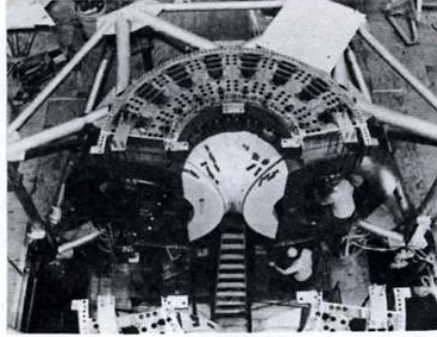
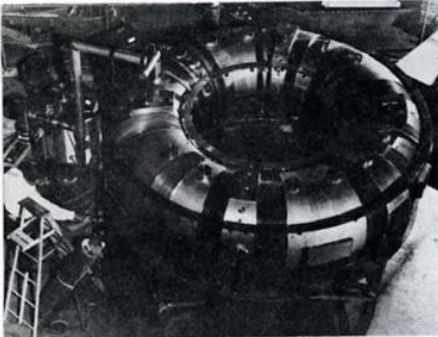
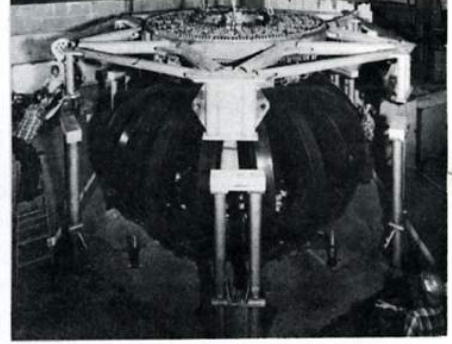
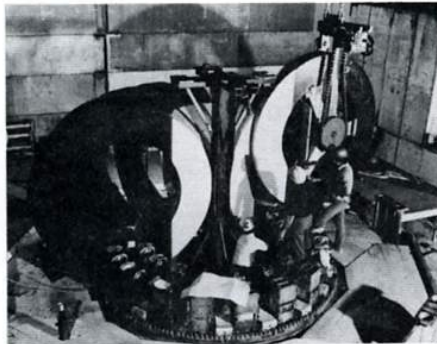
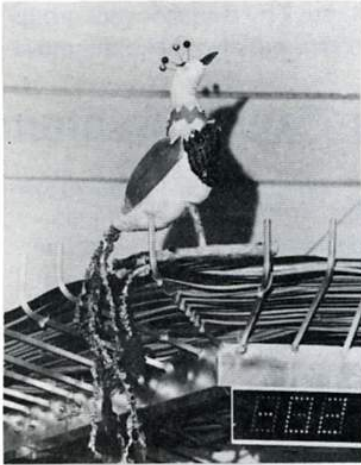
By WARREN E. LEARY  
Associated Press  
WASHINGTON — We reach about 60,000,000 degrees Celsius in the laboratory. But we are not there yet. We are trying to control the heat.

#### Record Temperature Gained For Sustained Fusion

PRINCETON, N.J. — The Department of Energy announced today that the Princeton University tokamak fusion device has achieved a record temperature of 10,000,000 degrees Celsius.

#### Princeton Discovers Technique For Fusion

Princeton University scientists have discovered a technique for sustaining nuclear fusion reactions.







# HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

Vol. 1, No. 3

February 7, 1980

## ORGANIZATIONAL CHANGES ANNOUNCED

PPL Director Mel Gottlieb has announced a number of important organizational changes and promotions within the Laboratory:

**Harold Furth** has been named **Program Director**. He will have responsibility for the scientific and technical program of the Laboratory. He will continue as Chairman of the Laboratory Program Committee and will, in the absence of the Laboratory Director, be Acting Laboratory Director.

**Paul Reardon** has been named **Associate Director and Head of the Technology Department**. The Technology Department responsibilities were announced some time ago; however, the implementation was delayed due to TFTR needs. He will also be Chairman of a new Laboratory Technical Operations Committee.

**Richard Rossi** has been named **Associate Director** and will continue as **Head of the Administration Department**. This new title reflects his increased involvement in many aspects of Laboratory management. He will continue as Chairman of the Laboratory Administrative Operations Committee.

**Paul Rutherford** has been named **Associate Director and Head of the Research Department** with responsibilities for the Theoretical and Experimental Divisions and for the newly established Applied Physics Division.

**Thomas Stix** has been named **Associate Director for Academic Affairs**, affirming the importance of this area.

**Mary Shoaf** has joined the Director's Office as **Assistant Director**.

**Dale Meade** has been named **Head of the Experimental Division** with responsibilities that include the TFTR experimental work.

**Francis Perkins** has been named **Head of the Theoretical Division**.

**John Schmidt** has been named **Head of the Division of Applied Physics**, a new division within the Research Department.

**Robert Sheldon** has been named **Head of the new Program Management Division** within the Technology Department.

**Ellis Simon** has been named **Head of the newly established New Projects Office** within the Technology Department.

Other senior level appointments are anticipated in the near future. A new organizational chart is on page 3.

## BENEFIT PROFILES

Within the next few weeks, each Princeton University employee will receive a benefit profile in the mail. This is an individual profile, describing all benefits (i.e. medical, insurance, retirement, vacations) held by the employee. In March, special seminars will be held on Main Campus to introduce the benefit profile. We at PPL will have our own seminars, conducted by Larry Tuzzo. All employees will be informed of the attendance schedule. Any questions concerning these profiles should be directed to Eleanor Schmitt (ext. 2035) or Mary Jones (ext. 2040) in the Personnel department.

## UPCOMING EVENTS

An **Orientation Program** for new employees is scheduled for **Tuesday, February 12**. The joint University/Laboratory program will begin at 8:45 a.m. in the Convocation Room (C217) of the Engineering Quadrangle. The morning session, entitled "The Nature of the University," will be presented by university faculty, administrators and students. The afternoon session, beginning at 1:30 p.m. in Sayre Hall auditorium will present an overview of PPL, its purposes, future and relationship with the University. Opportunity will be provided in the afternoon for employees to have questions answered on benefits, policies and procedures. The program will end with a tour of the Laboratory. Questions can be directed to Rosemary Benson on ext. 2041.

The fourth **Fusion Technology Symposium** will be held **Thursday, February 28** at 4:00 p.m. in Sayre Hall auditorium. Don Grove, Deputy Manager, TFTR Program, will speak on the status of TFTR design and engineering.

## FOR STOCKROOM USERS

If you find that the stockroom is not carrying the items that you need or if quantities of items are insufficient, tell the **STOCKROOM USERS COMMITTEE**. If you don't, the situation cannot improve.

The Stockroom Users Committee was formed in 1976 to serve as an interface between stockroom management and users. The committee is chaired by Jerry Newton, with Jean Henderson serving as Vice-Chairperson and Paul McCann as Secretary. Members are: R. Bitzer, W. Cary, A. Chaykowsky, V. Corso, A. Feldman, J. Frankenberg, N. Greenough, G. Katona, R. Majeski, J. Mayercak, K. Michalowski, L. Trainor and W.A. Rutkowski. Suggestions for stockroom improvements should be forwarded to committee representatives.

Holders of **stockroom catalogues** are reminded that catalogues showing 8-digit part numbers are out of date and should be discarded. New catalogues are being issued as they are developed. The electrical catalogue is now available; the electronic catalogue should be out early in February. Anyone wanting a copy of these or future catalogues should call Lucinda Trainor on ext. 3478.

The Plant Maintenance Department covers your needs from A to Z (see list below). For friendly, efficient service please call the Maintenance Control Center at Extension 3092.

- A Air Conditioning
- B Ballasts, Bathrooms, Bulletin Boards
- C Carpentry, Carpets, Cleaning
- D Drafting, Doors, Desktop Bookshelves
- E Electrical, Engines, Elbow Grease
- F Fluorescent Lighting, Fans, Faucets
- G General Maintenance, Good Work
- H Hauling, Halon Systems, Heating
- I Instruments, Information
- J Janitorial, Joints
- K Kitchens, Keys, Knobs
- L Ladies Rooms, Locksmith
- M Material Handling, Men's Rooms, Mail Boxes
- N Nice Work, Name Plates
- O Office Renovation, Outages
- P Plumbing, Painting, Plans
- Q Quick Service, Quotations
- R Refrigeration, Roofs, Renovating
- S Service, Signs, Sewers
- T Tiles, Toilets
- U Utilities
- V Valves, Ventilation
- W Welding, Water, Wire Partitions
- X (E)xcellent Work, (E)xterminators
- Y Your Problems, Yard Work
- Z Zealous Workers

Plus a host of others.

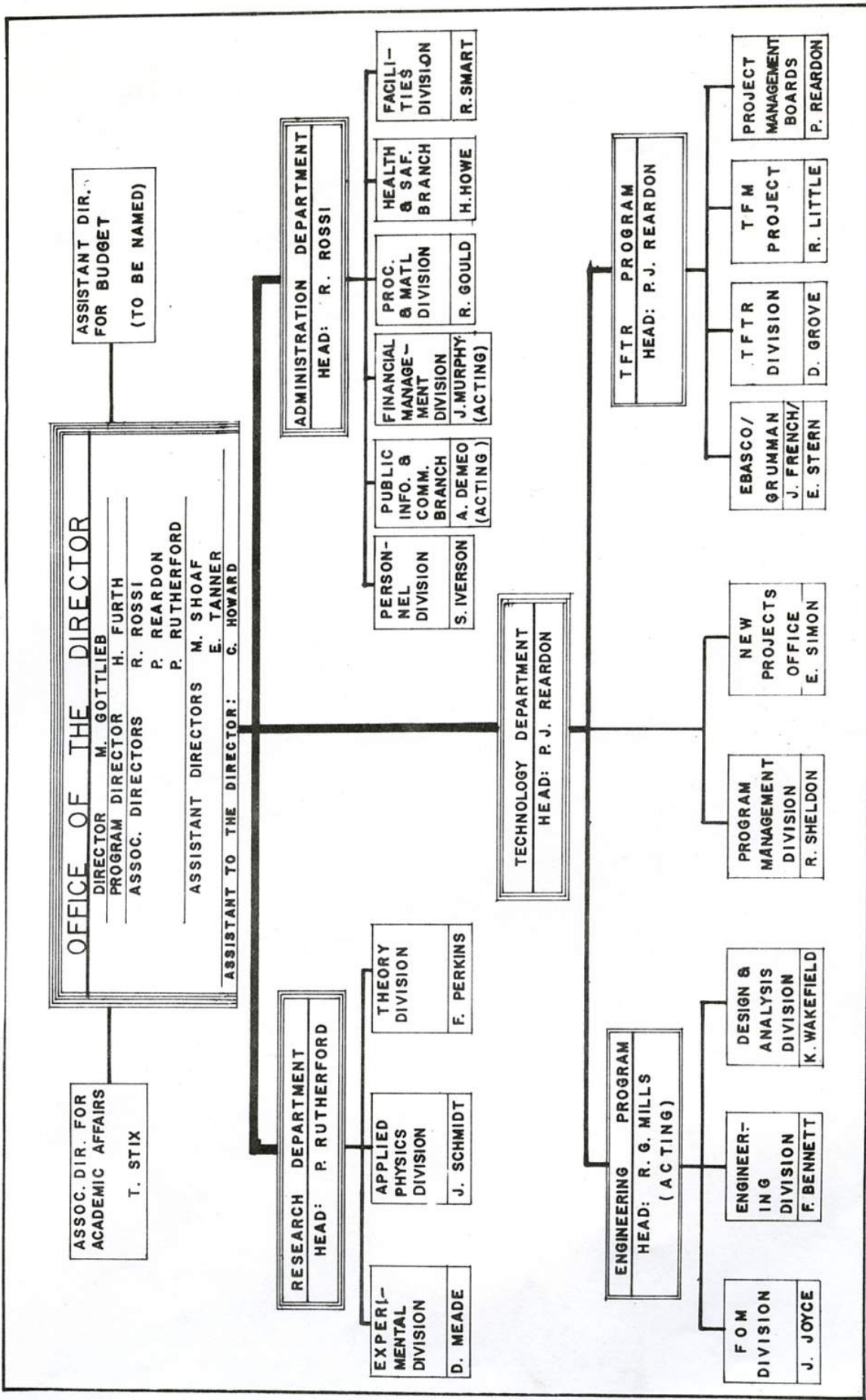
## JANITORIAL DAY CREW

The PPL Janitorial Staff is pleased to announce that there is a cleaning crew working daily at C-Site, effective January 21. Most of the office cleaning janitors have been changed to days so they may become more aware of the cleaning needs of the PPL employees. This change is also seen as an energy-saving measure, since the performance of these duties will not require any additional lighting. The immediate supervision for the day staff is provided by Mr. Jerry Williams as the lead janitor. The Janitorial Staff is available for service and special requests by calling the Plant Operations Office at ext. 3092.

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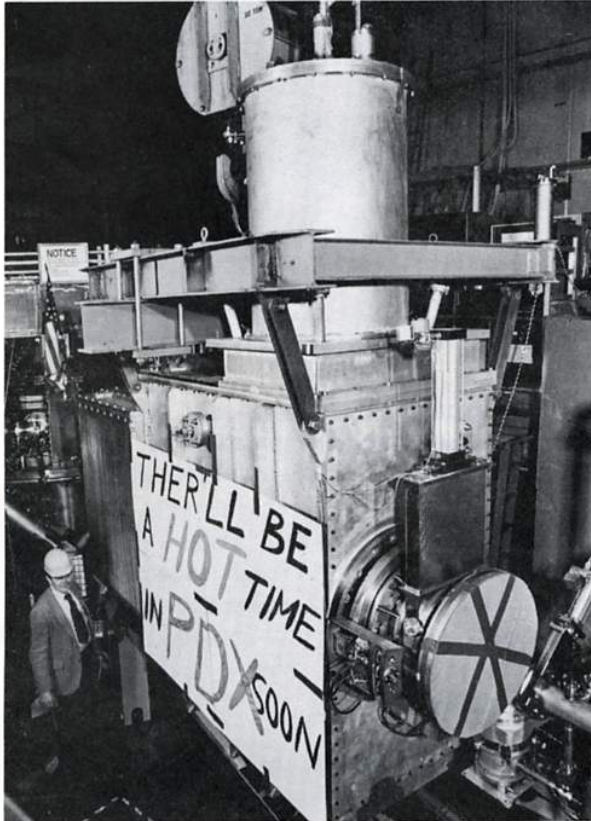


# HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

March 5, 1980

Vol. 1, No. 4



*Ellis Simon, Manager of New Projects Office, inspects the first PDX neutral beam line that was delivered to the machine platform on January 23. Fabricated at CVI in Columbus, Ohio and at Oak Ridge National Laboratory, the neutral beam line has been at 1-H building since June undergoing final check-out and qualification testing. Installation of the beam line on the PDX is expected to be completed shortly. It will be used to inject about 1.0 MW into PDX, raising the temperature to about 2 keV. The three remaining neutral beam lines will be installed on PDX by late summer.*

## Blue Cross/Blue Shield Special Announcement

Employees covered by Blue Cross/Blue Shield are urgently requested **NOT** to pay bills from radiologists belonging to any radiologist group in New Jersey. **SEND ALL RADIOLOGIST BILLS TO ELEANOR SCHMITT, PPL PERSONNEL, FOR IMMEDIATE REFERRAL TO BLUE CROSS/BLUE SHIELD.** Any questions should be directed to Eleanor on ext. 2035.

NEED A MID-WINTER LIFT ?



TRY DILLON GYM

See pg. 3

## Freeman Dyson on CO<sub>2</sub>

Freeman Dyson, renowned physicist, mathematician, and astronomer discussed his studies of carbon dioxide in the atmosphere at a PPL colloquium on February 6. According to Dr. Dyson, the amount of carbon dioxide in the atmosphere has been increasing since 1958 but estimates of the rate of increase vary. Data indicate that atmospheric carbon dioxide will double in the next 150 to 300 years. Determination of a more definitive estimate is difficult because of the lack of basic research in this area.

Dr. Dyson indicated that most interest by the Government and among the general public has been in the climatic effects of carbon dioxide. The Manabe-Wetherald model predicts that a doubling of atmospheric carbon dioxide would result in increased rainfall in most places and would generally moderate temperatures by lessening seasonal extremes. More importantly, it would result in a worldwide average temperature increase of about 3°C at sea level, with an increase of about 10°C in the arctic and antarctic regions. This would have the much publicized effect of melting the polar ice caps with attendant disastrous results.

Dr. Dyson warned against putting too much faith in the exactitude of these predictions because of the limited knowledge we have of what happens to carbon dioxide in the atmosphere, how it is absorbed and released by the oceans and by plant life, and how it interacts with other atmospheric gases, particularly oxygen. Dr. Dyson is more interested in other non-climatic effects of carbon dioxide, particularly its effect on photosynthesis.



In limited experiments, it was found that an increase in carbon dioxide increased the rate of photosynthesis in a particular plant, while decreasing the plant's water requirements. If this holds true for plants on a wide scale, it would have great importance for world food production. Dr. Dyson stressed that more research into these areas and greater study of all aspects of atmospheric carbon dioxide is necessary before precise predictions can be made.

Dr. Dyson is a professor at the Institute for Advanced Study. His autobiography, *Disturbing the Universe*, was published last year by Harper & Row as the first in a series of personal accounts by scientists, sponsored by the Alfred P. Sloan Foundation.

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## Computerized Literature Searches

The **Plasma Physics Library** can now search through the bibliographic records of several million published papers, technical reports, and conference proceedings using computerized data bases. This capability makes it possible to compile a list of works on a subject or by a particular author in minutes. Most of the data bases include items

published since 1970 and provide excellent coverage of all fields of science.

Charges for computerized searches vary depending upon the length of the search and the number of references printed out, but a typical search costs approximately \$15. Searches can usually be planned and performed in less than thirty minutes.

To request a search, call Tom Conkling (ext. 3566) or stop by the library at C-Site.

## Athletic Facilities For Winter Sports

Forced indoors by cold weather, PPL athletes will not want for suitable facilities. **Jadwin Gym**, located just south of Palmer Stadium, provides tennis and squash courts, an indoor track, and basketball, volleyball, and badminton courts. The indoor tennis and squash courts are open weekdays 8:30 a.m. to 9:30 p.m. (1:30 p.m. to 6:30 p.m. on the tennis courts is reserved for varsity team practice), Saturdays from 8:30 a.m. to 5:00 p.m. and Sundays from 1:00 p.m. to 5:00 p.m. Hours for the other Jadwin facilities vary and are posted each week.

Faculty and Staff permits for jogging and basketball at Jadwin Gym are \$25.00 for the first family member and \$15.00 for each additional family member, and are purchased at the Jadwin ticket office. All permits purchased now are valid through August 1980. Tennis rates are \$2.00 per person per hour for staff members and their families, and \$5.00 per person per hour for the general public. Jadwin squash rates are \$1.00 per person per hour for staff members and their families and \$2.00 for the public. Courts may be reserved by telephone or in person up to three days in advance. To do this, a reservation permit must be obtained at the Jadwin Gym ticket office. The one-time permit fee is \$10.00 for tennis and \$10.00 for squash and is in addition to court fees. Locker rooms and showers are available for women at Jadwin; men use the lockers in the adjoining Caldwell Field House.

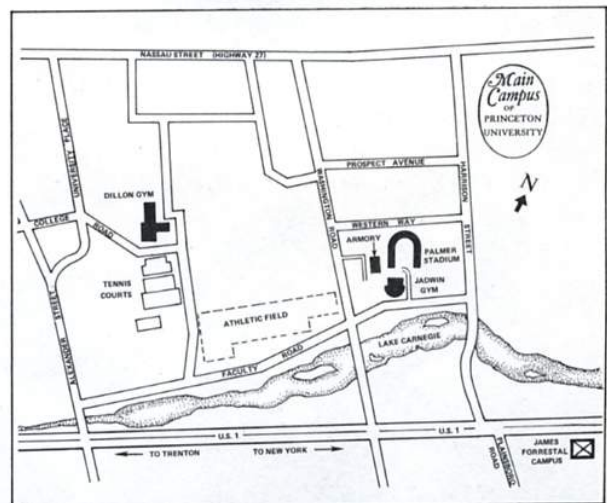
In the center of main campus, **Dillon Gym** provides an indoor pool that is open weekdays 9:00 a.m. to 2:30 p.m. and on Sunday from 2:00 to 4:30 p.m. It is closed on Saturdays. Dillon also contains basketball courts, and 18 squash courts. There is no playing fee for these squash courts; reservations are made in person up to a day in advance. Hours for these facilities vary and are posted each week. Generally, they are open until 9:00 p.m. Monday through Thursday and until 6:30 p.m. on Fridays. Saturday's hours are usually 9:00 a.m. to 5:00 p.m. and Sunday's are 1:00 p.m. to 5:00 p.m.

Dillon Gym also has a health fitness center providing exercise areas, bicycle ergometers, weights, and a variety of Nautilus and Universal equipment. The health fitness center operates on a more limited schedule than the other facilities; it is

*cont. on pg. 4*



*The Universal equipment at the Dillon Gym health fitness center, shown here, can be used for a variety of training exercises both with and without weights.*



*Dillon and Jadwin Gyms are easily reached by car; adjacent parking facilities are available.*

**REMINDER:** The closing date for the first Energy Conservation Suggestion Contest is March 14. Call 7-2-HELP for more information.

## Athletic Facilities *cont. from pg. 1*

usually open during the day, on weekday evenings, and on Saturday mornings. Locker room facilities are available for both men and women.

Faculty and Staff activity fees for Dillon Gym are \$35.00 for the first family member and \$25.00 for each additional family member. Combination permits for both Dillon and Jadwin are \$55.00 for the first and \$35.00 for other family members. Guest fees are \$2.00 per session. Permits are available at the Jadwin Gym ticket office.

In addition to the gymnasiums, **Baker Ice Rink** has public skating sessions on Saturday evenings and Sunday afternoons. The fee for staff members and their families is \$1.00 per person.



*This complex piece of equipment is not a tool of the Inquisition but rather one of a series of Nautilus machines at the health fitness center. These devices allow one to exercise each of the body's muscle systems by lifting, pulling, or pushing weights on a pulley system that evenly distributes the force of the weights throughout the entire exercise motion. •*

## Gasoline and Oil Spills

A Spill Prevention Control and Countermeasure (SPCC) Plan has been implemented for PPL to provide for the early detection, reporting and control of oil and gasoline spills from delivery tank trucks or storage tanks. In the event of an oil or gasoline spill, the PPL Fire Brigade, ext. 3333 (or, during off-hours, the Plainsboro Fire Company at 799-2333) is to be notified to respond to the spill scene. After precautionary fire fighting coverage has been called, Conrad W. Stout, Manager of Plant Engineering and SPCC Officer is to be notified immediately (ext. 3378, home: 609-799-3683). If he is unavailable, a list of alternate SPCC Officers is posted in all PPL Security department offices and PM&O operating areas.

## Emergency Closings

News of Laboratory closings or delayed opening due to extreme weather conditions, such as heavy snow, icy conditions or floods, will be broadcast on the following stations:

WHWH (Princeton)	1350kc
WTTM (Trenton)	920kc
WPST--fm (Trenton)	975kc
WBCB (Levittown)	1490kc
WCTC (New Brunswick)	1450kc

## Credit Union Declares Dividend

A 7% dividend has been declared by the board of directors of the Princeton University Employees Federal Credit Union for the last quarter of 1979. This is the maximum dividend allowed by law, and it is paid by only about one of every 10 credit unions in the country.

## For Sale

Complete photo darkroom equipment for black & white. Brand-new. Ext. 2037.

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*The PPL Hotline is issued by the Princeton University Plasma Physics Laboratory, a research facility supported by the U.S. Department of Energy. Correspondence should be directed to PPL Communications Office, Aero Lab, James Forrestal Campus.*

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# HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

Vol. 1, No. 5

March 18, 1980

## ENERGY CONSERVATION MANDATE

*PPL Director Mel Gottlieb  
has issued this special  
directive concerning energy  
use at the Laboratory.*

We are all well aware of the severe impact that spiraling energy costs are having on the Federal budget. By Presidential Directive, all Federal Agencies and supporting contractors, including PPL, have been operating under special energy conservation restrictions. Under this program, each activity must reduce total energy consumption by 5% and gasoline by 10%, compared to the preceeding year. This reduction is absolute. We do not get any exemption for growth or to support new facilities. As a result of many energy conservation measures, mild weather, and an obliging schedule on the machines, PPL has been achieving these goals. Hopefully, this has been done with minimal adverse impact on our operations, but with an overall sense of sacrifice by all of us. (Sweaters are "in".)

This added emphasis on energy conservation is a major thrust of the Department of Energy with Under Secretary John Deutch personally responsible for the DOE contractors' conservation program. A specific amendment to our DOE contract is being imposed mandating energy conservation goals.

Apparently in the light of recent national and international developments, (we can all speculate) the program has been recently modified to require that in addition to the previously mentioned annual goals, we reduce energy consumption during March, 1980 by 5% over March, 1979. This prevents us from applying savings from earlier months this year to our March consumption.

These latest goals have "no waiver" provisions, and specifically require a shutdown of operations if that is what is needed to stay within the allocations. Some additional tightening-up will be needed for PPL to meet these goals. As of the 12th of the month, we were running about 6% over our allowable allocation. However, with reasonable weather for the balance of the month, and with a concerted effort to save, we should be able to meet our target without interrupting operations.

Effective at once, for the month of March, I have asked that the following actions be taken:

- All heating will be shut off each night at 10:00 P.M., and turned on at approximately 6:00 A.M.
- Heat will be shut off weekends from approximately 12:00 P.M., Saturday, to 6:00 A.M., Monday.
- An electrician will shut off heat in Modules, Buildings 1-O, 1-R, 1-P, and other electrically heated spaces from 4:00 P.M., Friday to 6:00 A.M., Monday.
- PPL supply voltage will be dropped from  $117 \pm 5V$  to  $114 \pm 4V$ .
- Daily readings of fuel and electric consumption will be taken so that we can monitor our use, and take whatever additional steps may be needed to assure that we can meet our targets. *cont. on pg. 2*



## Mandate *cont. from pg. 1*

If all of us can save just 10% of our present energy consumption for the next 2-1/2 weeks, we will not have to resort to any more drastic actions. Turn off the lights; turn down any space heaters; tell plant maintenance (ext. 3092) if you know of any situations that are wasting energy; tell Connie Stout, (ext.3378) or Bob Smart, (ext.2652) if you have any suggestions for steps that we could take

right now to save energy. I am asking that everyone in the Lab cooperate in this effort. We will have no choice but to reduce operations if we do not cut back our energy consumption.

As further information becomes available, I will keep you advised of our progress. Thank you for your help.

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## Caution Urged With Carcinogens

The Occupational Safety and Health Administration (OSHA) has compiled a list of 19 substances legally classified as carcinogens. These substances include 2-Acetylaminoflourene; Acrylonitrile; 4-Aminodiphenyl; Arsenic and all its inorganic compounds except arsine; Benzidine; bis-Chloromethyl Ether; the benzene soluble fraction of coke oven emissions; Dibromochloropropane; 3,3'-Dichlorbenzidine and its salts; 4-Dimethylaminoazobenzene; Ethyleneimine; Methyl Chloromethyl Ether; 4,4-Methylene bis(2-chloroaniline); Alpha-Naphthylamine; Beta-Naphthylamine; 4-Nitrobiphenyl; N-Nitrosodimethylamine; Beta-Propiolactone; and Vinyl Chloride monomer.

Benzene has yet to be added to the list, since standards regulating its use are presently tied up in litigation. It should, however, be treated as if it were part of the listing.

Phenyl Beta-Naphthylamine and 2-Nitronaphthalene, although not regulated as carcinogens, are metabolized to Beta-Naphthylamine in man.

Since these materials require special handling, storage and disposal techniques, their presence on campus should be brought to the attention of Ray Jeanes in the Health and Safety Office (ext. 2532). Regulations pertaining to these chemicals are available at the Health and Safety Office.

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## Basketball Registration

Applications are still being accepted for the Men's Competitive Basketball League now being formed.

The league is open to all employees of the University or PPL. Anyone interested in joining the league should contact Dennis Williams at 2-3208 and leave your name and number.

## Softball Sign-ups Open

Registration is now open for PPL's women's softball team. Female employees interested in participating should contact Joanne Savino at ext. 3005. Teams and playing sites will be announced at a future date.

## No Complaints on Complaint System

The Complaint System has been in effect for one year. To date, approximately 74 complaints have been received, ranging in topic from snow days to promotions, supervisors, job posting and so on. The system is being used, and is working well as a means of resolving the complaints of PPL employees. The process benefits the Laboratory by keeping communication channels open, helping to resolve conflicts and misunderstandings, and showing the employee that legitimate complaints will be recognized and rectified in accordance with Lab policy and procedures.

*cont. on pg. 3*

## No Complaints *cont. from pg. 2*

To use the Complaint System effectively, an employee should first discuss the problem with his or her supervisor. If not satisfied with the outcome of this discussion or if the employee feels that such a discussion would not be tactful or appropriate, he or she should then contact Sandy Birchmeyer, Manager of Employee Relations.

The Employee Relations Department wishes to thank the many employees and supervisors who have used the Complaint System toward the best interests of the Laboratory.

## DOT Proposes New Bus Routes

Bus transportation from Trenton and Princeton to the Penns Neck area is currently under consideration by the New Jersey Department of Transportation. One proposal would establish a bus run from the Princeton Shopping Center to the Penns Neck Area, while a second proposal would provide service from the West Trenton Fire House area to Penns Neck. Once the proposals receive DOT approval, Mercer Metro will work out the exact routes.

Those wishing to support such a service should contact:

*Mr. Benjamin Feigenblum, Director  
Division of Bus Transportation Management  
New Jersey Department of Transportation  
1035 Parkway Avenue  
Trenton, New Jersey 08625*

## Histories Available

Dr. Earl Tanner's second book on the history of PPL, "The Model C Decade", is now available from the Publications and Reports Office. Dr. Tanner's first book, "Project Matterhorn", has also been reprinted.

Copies of either volume may be obtained at Room M-165 at C-Site, Module 2 or by calling Sara Paterson at ext. 2662.

## Symposium Scheduled

The fifth Fusion Technology Symposium will be held Thursday, March 27, at 4 p.m. in Sayre Hall auditorium. Roy Little, TFM project manager, will speak on the TFM project.

## Security Measures Outlined

Responding to an increased concern for security by PPL supervisors, the Security Office has implemented a PPL security system.

Photo ID's have been issued and should be worn at all times in controlled areas. Identification is also required in all areas (both controlled and non-controlled) outside of normal working hours (Monday-Friday, 8 a.m.-5 p.m.).

Identification will be issued to visitors after hours, or when visiting controlled areas. Red cards will be issued if an escort is required; blue cards will indicate no escort is needed. Visitors to controlled areas will require an escort unless non-escort status is requested by a Division Head.

The ID is required for after-hours entry to C-Site, where all exterior doors are being locked at 5 p.m. and alarmed at 6 p.m. Security guards will ask for identification from anyone not displaying a badge when required.

For the system to be effective, all supervisors should insist that ID be worn, challenging those not displaying an ID when required. Any unidentified personnel in controlled areas should be reported to the Security Office immediately. After hours, unidentified personnel should be directed to the Security Desk (ext. 2536).

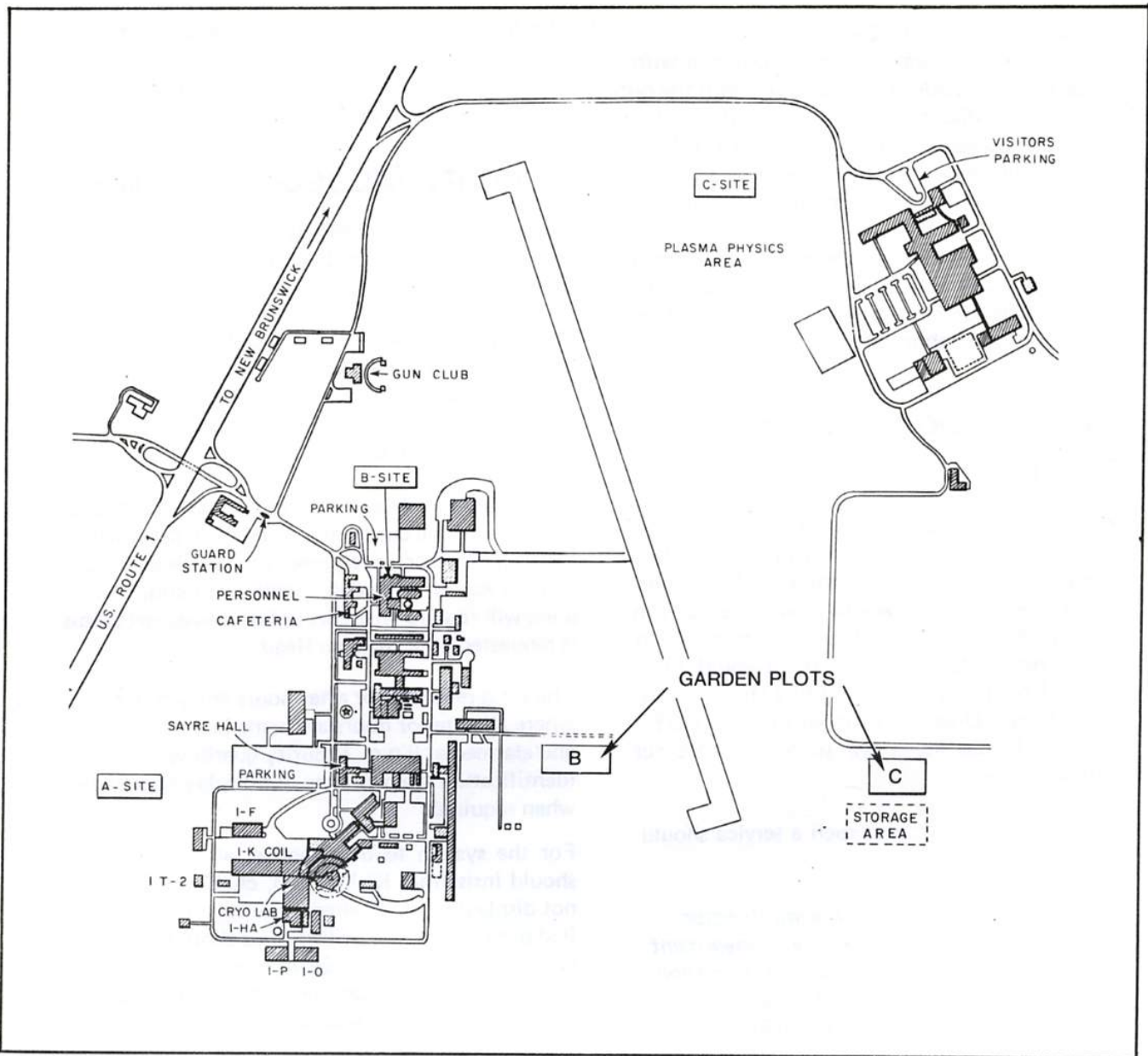
Input and suggestions for improved security should be submitted to the Security Office (ext. 7-2-6688). The location and accessibility of controlled areas will be distributed by the Security Office in the near future.

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*The PPL Hotline is issued by the Princeton University Plasma Physics Laboratory, a research facility supported by the U.S. Department of Energy. Correspondence should be directed to PPL Communications Office, Aero Lab, James Forrestal Campus.*

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# Time to Plot a Garden



## GARDEN PLOT REGISTRATION

Garden plots are again available to Forrester Campus employees this year. The A-B and C-Site locations (indicated on the map above) are the same as last year.

Prospective farmers should complete and submit the form printed below to Administrative Services, Module 2. Further information is available by calling ext. 2655.

Name \_\_\_\_\_

Extension \_\_\_\_\_ Building \_\_\_\_\_ Site \_\_\_\_\_

Previous Lot Used No. \_\_\_\_\_ Newcomer \_\_\_\_\_



# HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

Vol. 1 No. 6

April 17, 1980

## PDX Update

During the last week in March, PDX resumed operation after a four-week shut-down for repairs, more power tests, and magnetic measurements. Since early this year, PDX had been operating using its sophisticated magnetic limiter/divertors as a means of reducing wall-evolved impurity atoms in the plasma. Use of this system resulted in a decrease in carbon and oxygen impurities by about one-half at low densities (about  $10^{13} \text{ cm}^{-3}$ ) where divertor operation was not expected to be very successful. It had been thought that about three times that density would be needed for good divertor results. Titanium impurities in the plasma were reduced by a factor of ten, although some additional titanium influx has been observed late in the discharge.

By shifting the position of the plasma, PDX can be operated using only the inner two divertors, the outer two, or all four at once. The plasma should be least stable in the first two cases. During the first quarter of this year, all of these plasma configurations were tried and were found to be more stable than expected.

The first PDX neutral beam line was installed on the machine in February and was successfully operated first with an ion source from PLT and then with a prototype source. Operation into the machine is expected by the end of the month.

In another new development, a pellet fuel injector has been added to PDX and is expected to be operational soon. Up until now, both PLT and PDX have used gas injection as a means of introducing fuel into the vacuum vessel during operation. On PDX, however, much of the gas, when introduced into the outer scrape-off region of the plasma, is swept onto the neutralizer plates. Only about 10% of the gas fuel penetrates into the central plasma region. With a pellet injector, which was developed at Oak Ridge National Laboratory and successfully tested on the ISX tokamak, a frozen hydrogen fuel pellet is injected into the plasma at a speed of about 1,000 meters per second. The hydrogen

pellet is expected to penetrate the scrape-off region and enter the plasma's center area, enabling achievement of higher plasma densities. It is hoped that in the future a four-barrel unit can be developed to inject pellets at various intervals.

In the next few months, in addition to optimizing divertor action, PDX operation will concentrate on elongating the D-shaped plasma configuration, which showed more resistance to ballooning mode and tearing mode instabilities than is found in more circular plasmas. When the D configuration is elongated, however, the plasma becomes increasingly unstable in the vertical direction. To counteract this, a power amplifier will be added to the PDX divertor field coils to generate a radial field that can hold the plasma on the midplane. With this radial field available, it should also be possible to operate using only one divertor, a desirable situation from the point of view of future reactor design.

More also remains to be done to optimize the magnetic field configuration for plasma start-up with the limiter/divertor system in operation.

## Energy Conservation Status

General Facilities Manager, Robert Smart issued the following statement on the laboratory's energy conservation program:

"Thanks to the help of a lot of people, PPL was able to meet its mandated energy reduction goals for March. Unexpected down time on the machines during the last few days pushed us from barely making the mandated 5% reduction to over a 7% reduction.

"Although this is supposed to be the end of the one-year 5% program, we still have a longer term requirement to reduce energy consumption per square foot by 50%."

Mr. Smart added that personnel would be advised of the laboratory's efforts toward that goal, and expressed his thanks for employee support of the conservation measures.



*The first class in the technical typing mini-course smiles for the camera. Seated left to right are Dolores Bergmann and Ann O'Day. Standing, left to right, are Joyce Bitzer, Patty Pugliesi, Glenda Fendrick, teacher Elsie Ferreras, course organizers Bobbie Cruser and Millie Willerton of the Secretarial and Office Support Staff Committee, teacher Marianne Weissenburger, and Marilyn Hondorp.*

## Technical Typing Course Commences

Through the concerted efforts of Millie Willerton and Bobbie Cruser of the Secretarial and Office Support Staff Committee and Larry Holpp of the Personnel Training Office, the technical typing mini-course has become a reality.

The course is designed to familiarize typists with the Greek letters and symbols used at the laboratory, and to aid in preparation of technical papers. The only prerequisite for the course is a typing speed of at least 50 words per minute.

Elsie Ferreras and Marianne Weissenburger are the volunteer teachers for the first session of the course currently underway. Classes, consisting of 6 students and one teacher, meet for one hour on Mondays and Wednesdays or on Tuesdays and

Thursdays. Each session runs for three weeks, with additional classes scheduled at three week intervals.

A total of 32 people have signed up for the course. If you are interested in signing up for subsequent classes, please contact Millie Willerton (ext. 3161) or Bobbie Cruser (ext. 2489).

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## PPL Annual Report

The PPL Annual Report for fiscal year 1978 is available from Publications and Reports. Anyone interested in obtaining a copy who has not yet received or ordered one should contact Sara Paterson (ext. 2662).

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## Plan Ahead For Parking

The number of Visitor Parking spaces have been kept down to the minimum needed to handle our normal requirements. However, these spaces cannot handle large influxes of visitors for special conferences and meetings.

To preclude problems with these special functions, persons setting up such programs should notify Security (Jim Koplner, ext. 7-2-6688) so that additional spaces can be reserved when needed. The additional spaces will normally be an added extension to present visitor stalls.

Please give Security at least three days notice, along with expected automobile count and exact location and duration of the event, when requesting additional spaces.

## Toll - Free Directory Saves Time And Money

Your fingers can do the walking across the country gratis if you use the toll free (800) telephone directory now available through the PPL Telecommunications Department.

The directory contains hundreds of numbers that may be called with no telephone expense. Listings of places to buy items such as cars, brand name furniture, special cuts of meat, fruit from the grower and flowers are included in the guide. Travel arrangements, hotel and motel reservations, and chartered jet service can also be booked toll free.

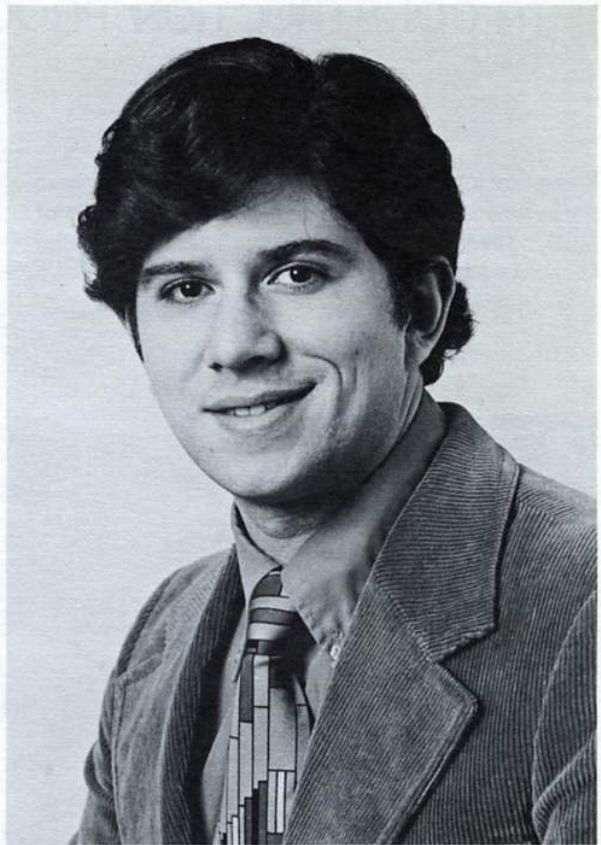
The toll free directory is available for inspection in the Console Room, C-Site, Room 108-A.

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## Symposium Scheduled

The sixth **Fusion Technology Symposium** will be held Monday, April 28 at 4 p.m. in Sayre Hall auditorium. Dr. Don Steiner, manager of the Engineering Test Facility Design Center, will speak on the status and plans of the ETF Design Center.

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*Larry Holpp joined the Laboratory on February 18, 1980 as Manager of Training and Development. Larry was previously employed as a management development consultant to the Department of the Navy. He has also published several papers on skill development in industrial settings.*

## Workshops Planned

In addition to the new technical typing course, a series of Skill Development Workshops are being planned for the future. Courses will include introduction to computers, word processing, public speaking, enhancing written skills, shorthand refresher and typing for professionals.

Further information on any of the planned workshops is available through Larry Holpp (ext. 3480). A schedule of workshop classes will be announced at a future date.

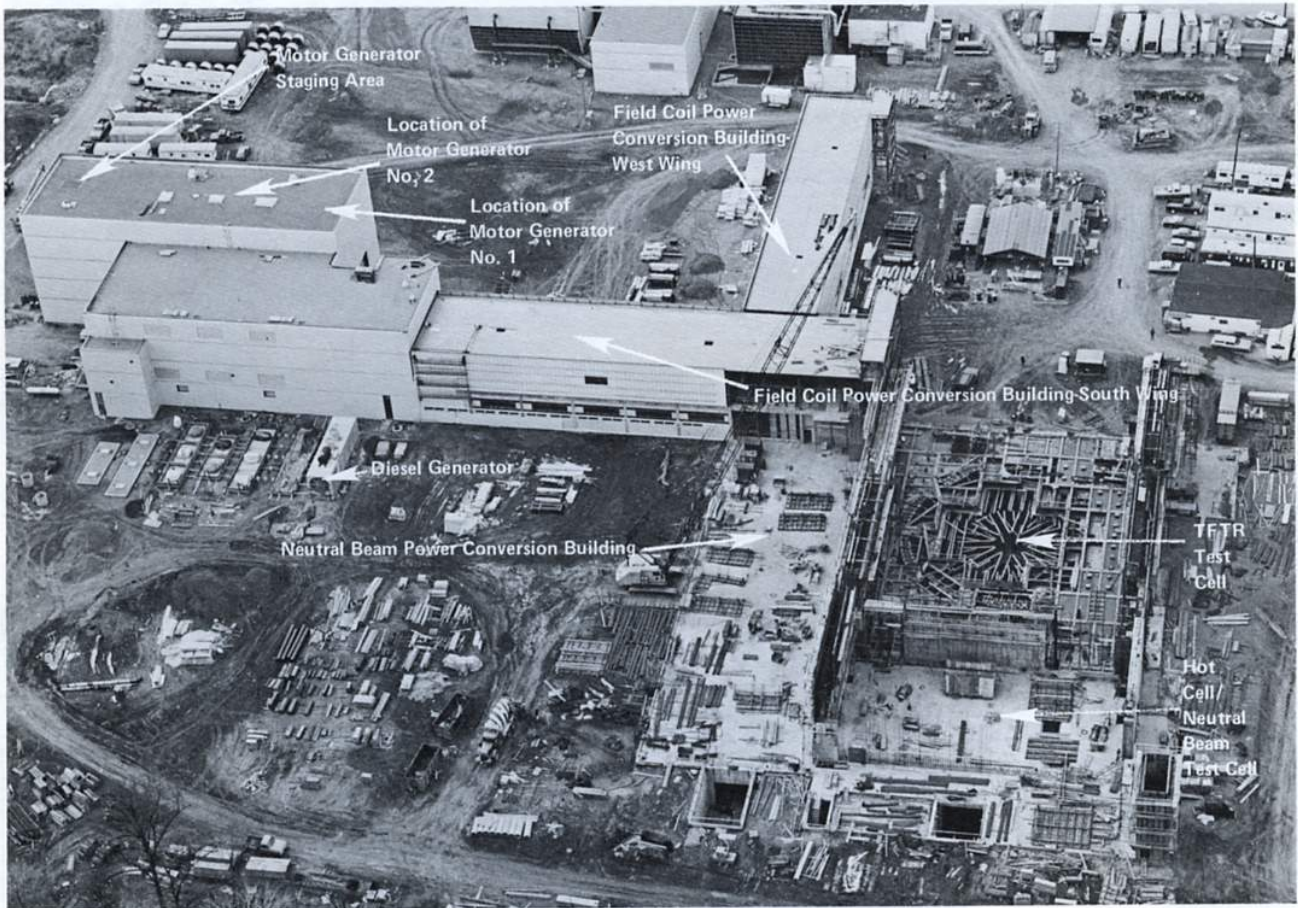
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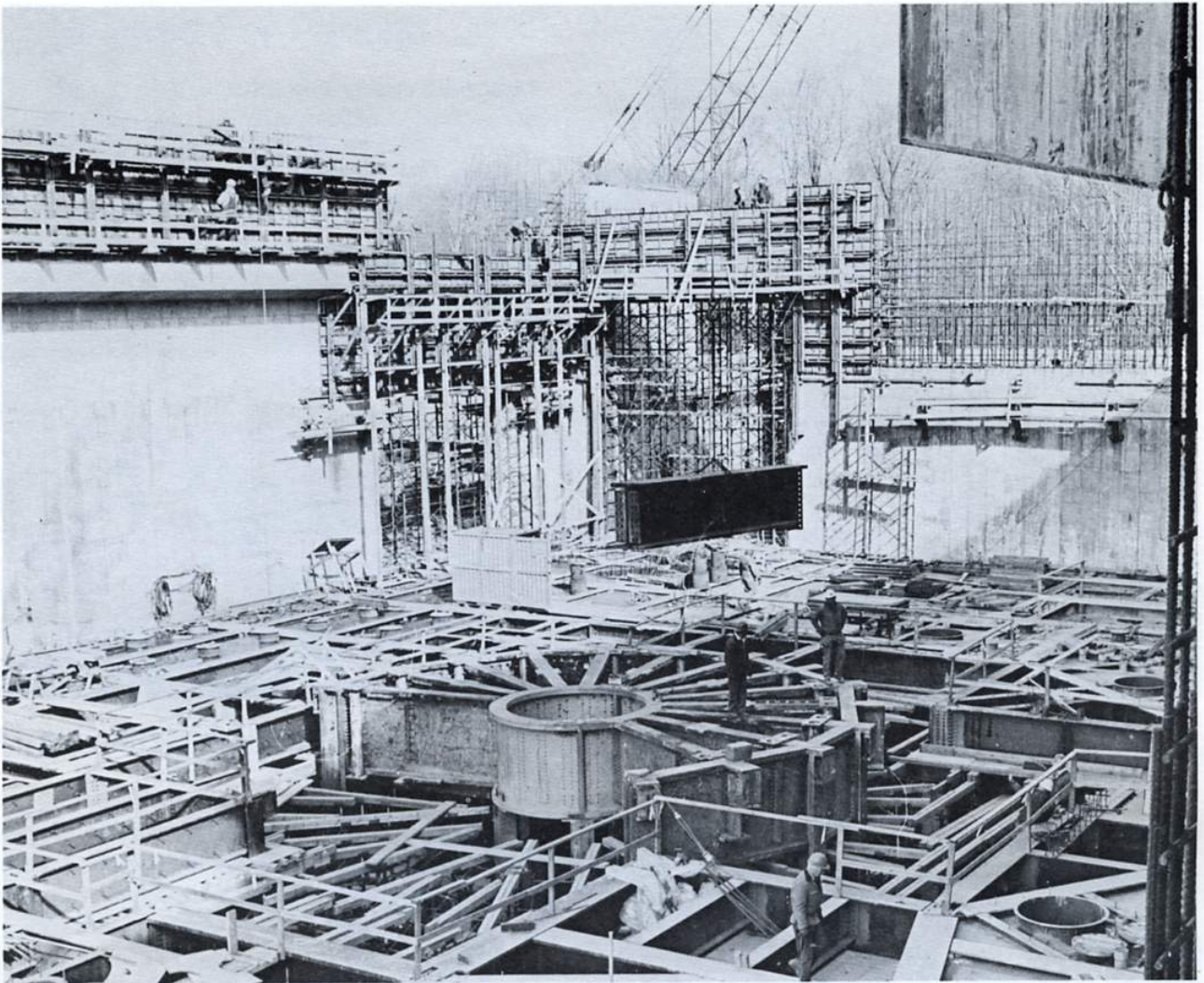
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# TFTR CONSTRUCTION PROGRESS

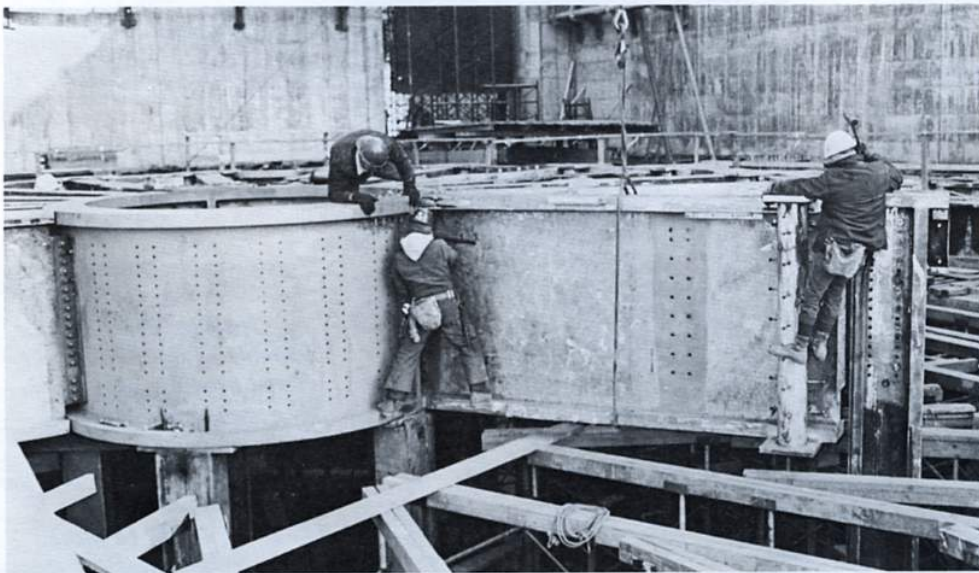
Blessed by a mild winter, TFTR construction has been progressing at a good pace through the first quarter of 1980. These photos show some of the progress that has been made.



*This photo, looking west, was taken in January, and provides an overview of the construction area. Construction of the upper level of the Neutral Beam Power Conversion (NBPC) Building awaits completion of the adjoining TFTR Test Cell wall that will support the NBPC building roof. Construction of the below-ground level of this building is finished, and cables and equipment are being installed. To the east of the Motor Generator building, a 2 MW diesel generator has been installed; it will be used as an emergency back-up power supply.*

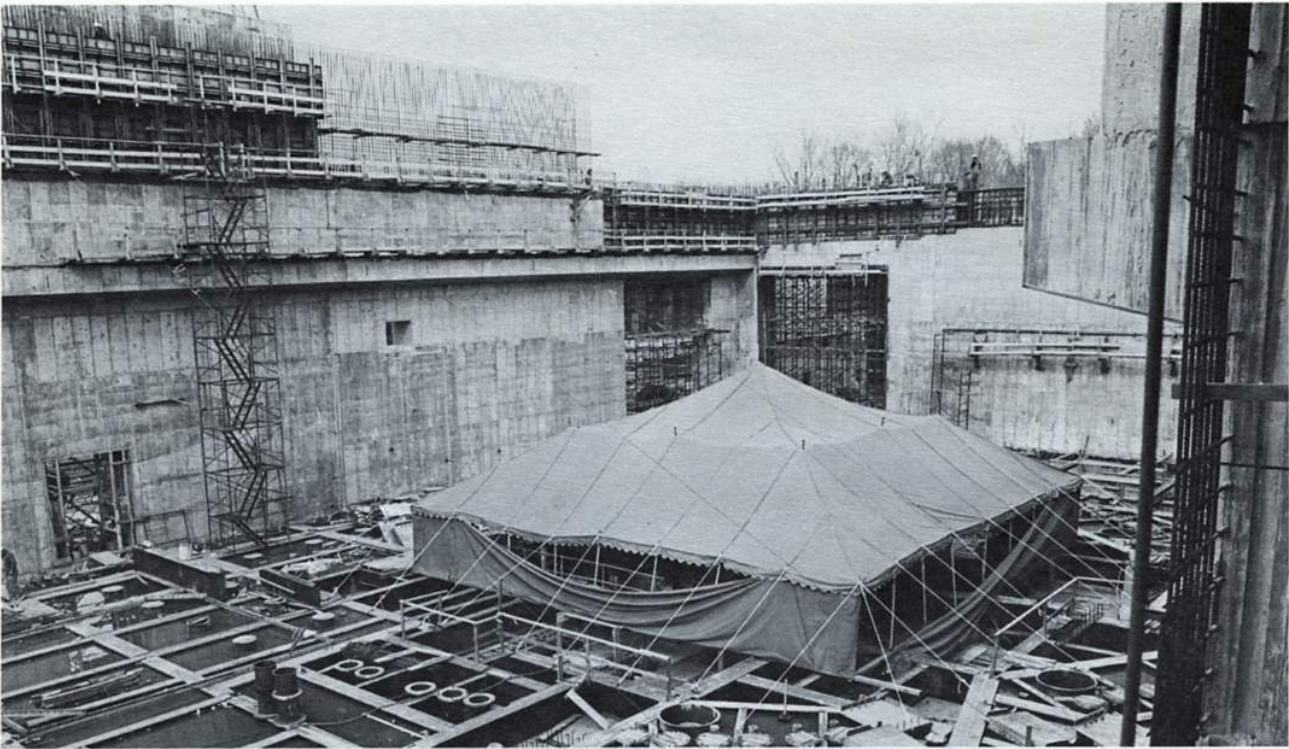


*Much was accomplished in the TFTR Test Cell during February. This photo shows the assembly of the stainless steel substructure (center) that will support the tokamak and work on the Test Cell walls. When complete, the reinforced concrete walls will be 60 feet high and 4 feet thick.*

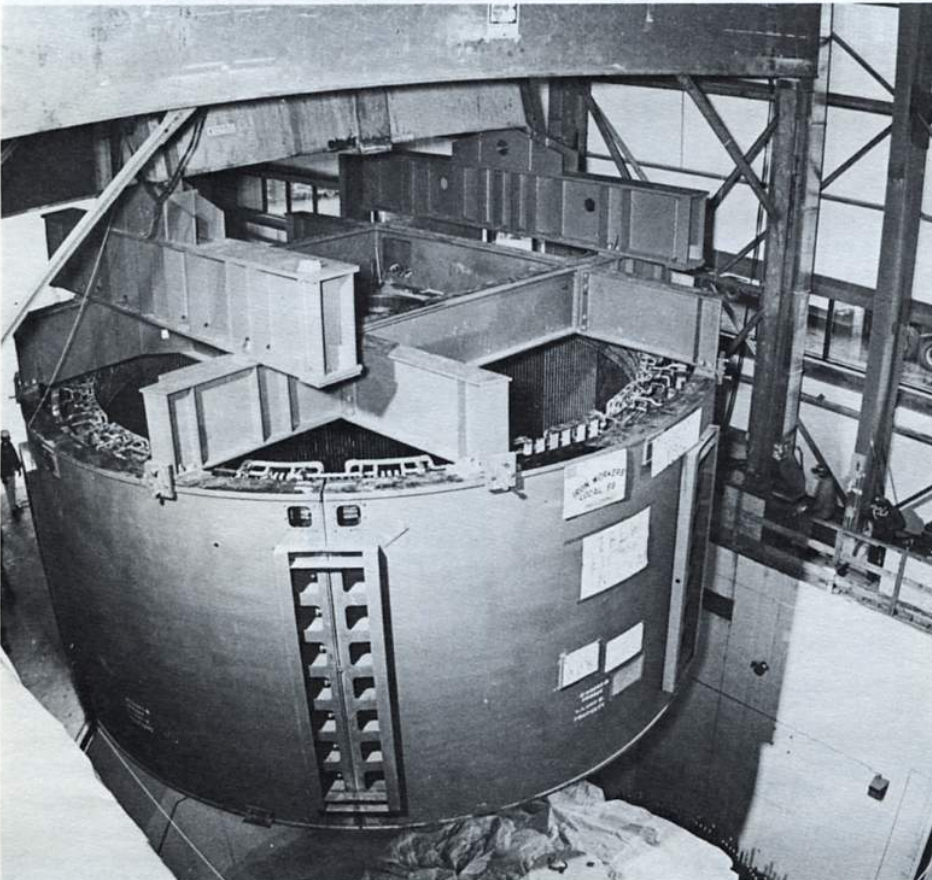


*Workers on the substructure.*

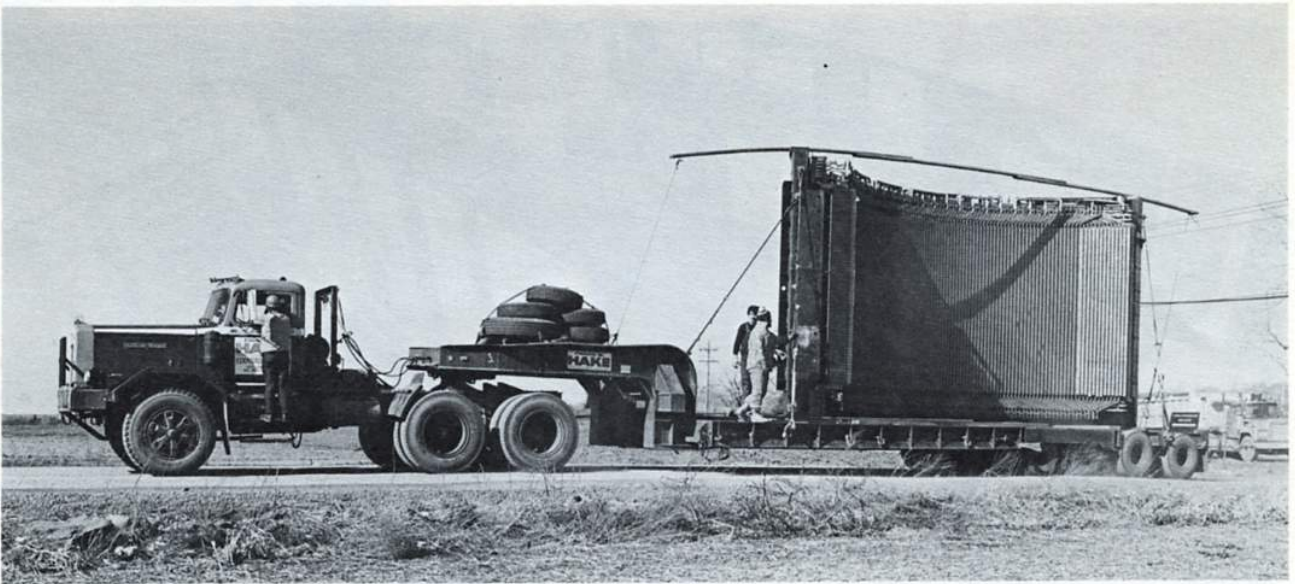




*In March, the central area of the test cell was covered with a tent so that work could progress during inclement weather.*



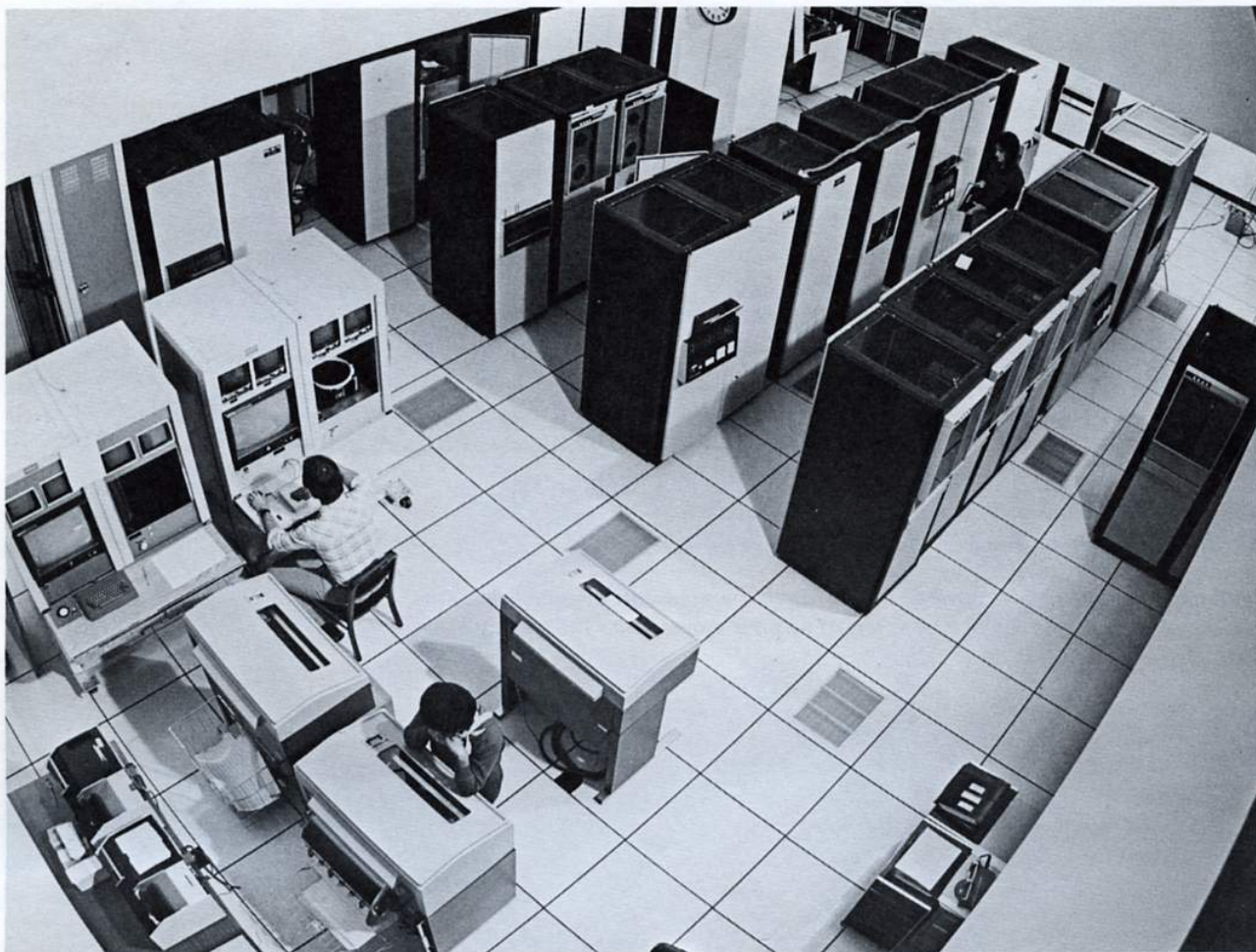
*March was also a busy month in the Motor Generator Building. The first 350-ton stator assembly is shown here being moved from the staging area to a temporary home in motor generator pit number 2. When construction of the rotor assembly in pit number 1 is complete, it will be moved there permanently.*



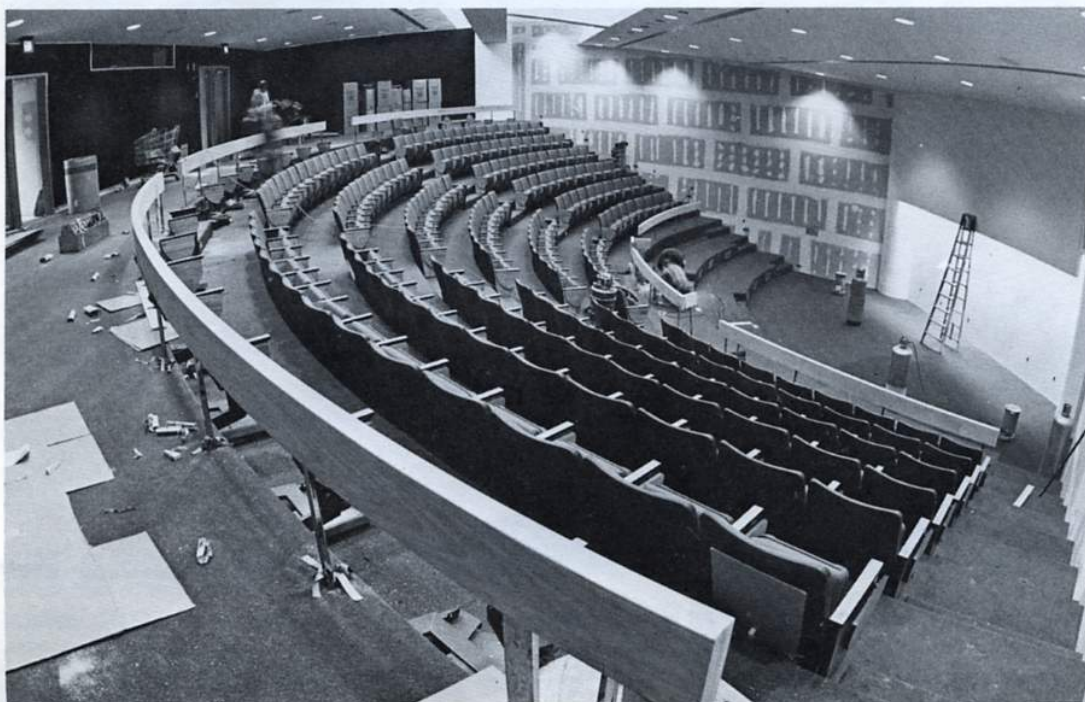
*On the road with the stator section. During March the second motor generator stator was delivered to PPL in three sections one of which is shown here. The stator will be assembled in the MG staging area.*



*Within the west wing of the Lab/Office Building, the TFTR visitors' gallery is complete. The windowed viewing area on the left overlooks the TFTR control room; the one on the right overlooks the computer room.*



*The CICADA computer system viewed from the visitors' gallery.*



*The PPL auditorium in the Lab/Office Building west wing is nearly complete.*



# HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

Vol. 1, No. 7

May 7, 1980

## Energy Conservation

Increased energy costs, budgetary restrictions and an energy consumption limit mandated by DOE will require the continuance of last year's summer energy conservation program.

In accordance with U.S. DOE recommendations, all air conditioning systems operated for human comfort will be run at a minimum indoor temperature of 78 degrees. Departments with individual air conditioning units are requested to adhere to the temperature minimum, and to turn off all units during nights, weekends and non-use hours. Timers should be used where available.

Air conditioning used for special requirements, such as laboratory experiments, sensitive equipment, valuable books and the like should be minimized as much as possible. Systems with humidity controls may be operated below the 78 degrees level to conserve the energy necessary to reheat the air.

Employees are also asked to turn off unnecessary lights and reduce their use of heat-producing equipment.

By observing similar restrictions last year, a major reduction in energy consumption was attained. That reduction helped keep PPL within DOE energy limits all year, preventing shut-down of experimental devices.

## Please Don't Take a Spring 'Break'

With the coming of spring weather, many employees are taking walks during breaks and at lunch time. PPL encourages you to get out and stretch your legs - but *not* in the construction area. Safety, insurance, and good common sense say to stay away. Even if you personally aren't the victim of an accident, you can easily distract a construction worker from his job and result in his becoming an accident victim.

## Stars To Shine At Lab Picnic

Reserve June 14 on your social calendar, for that's the day slated for the annual PPL picnic. The festivities will begin at 1 p.m., with food served between 3 and 6 p.m. and a talent show from 6 to 8 p.m. All budding Broadway stars wishing to be discovered at the picnic should contact Mary Alice Eubank at ext. 2555.

Volunteers are needed to handle the children's games, which will run from 3 to 4 p.m. Those interested in assisting should call Mary Alice.

Tickets for the picnic will go on sale June 2.

## Men's Softball Season Begins

In spring, 'tis said, a young man's fancy turns to thoughts of - softball? That's where the thoughts of the 18 members of the PPL men's softball team have been turning in recent weeks.

The team is one of 26 squads in the Princeton Industrial League, and plays its games each Tuesday at 6 p.m. Team members are employees of the laboratory, and although Tom Holoman reports that three-quarters of the team are newcomers, prospects look good for the coming season.

Tom is one of three team "organizers", along with Jim Conover and coach Ramon Pressburger Jr. The team was slated to open against Firmenich Inc. on April 29, but was rained out.

Home games are played on the field near the picnic grounds. For future game information, contact any team member or Tom Holoman at ext. 2748.

## Toka-Smash Set

The laboratory is preparing to embark on a new project: the Toka-Smash. That's not the name of a machine, however; it's a tennis tournament.

Scheduled for May 17 at the Princeton University tennis courts, the PPPL Tennis Toka-Smash is open to all laboratory employees and their families. The tournament offers an opportunity for players to meet and sharpen their game for the summer. An attempt will be made to match players of similar ability.

Each entrant in the tournament will play two singles matches and one doubles match. Parings for doubles teams will be determined by the singles results.

Matches are decided on the best two of three sets (with 12 point tie-breakers), or by the leader at the end of each 1 1/2 hour slot.

A picnic lunch will be provided, with a barbecue for players and their cheering sections beginning at 11 a.m.

Prospective players should contact Marilee Thompson before May 15. Each entrant must bring \$5 and one can of new yellow tennis balls to the tournament. Players will be notified of the time of their first match.

In case of rain, the Toka-Smash will be held on May 18.

## Return Empty Cylinders

The stockroom department is asking everyone to return their "empties" -- their empty gas cylinders -- as soon as possible.

Due to the laboratory's failure to return empty cylinders to vendors promptly, serious problems in receiving adequate deliveries of commercial gas have developed. The returning of empty cylinders allows the stockrooms to order and receive larger quantities of full gas cylinders.

To arrange for pick-up of empty cylinders, contact Jean Henderson at ext. 3576 or 3575, giving the location and number of the cylinders to be returned.

## Writing Course

Employees who wish to bolster their writing skills can now do so with the "Writing for Clarity" course being offered through the Personnel Department.

The course, to be taught by published novelist Meg Gilbert and former college writing instructor Paula Greenberg, will deal with letter, report and memo writing. Students will have an opportunity to practice their writing, and will receive pointers on how to eliminate weaknesses and maximize strengths.

The course is free, and is open to any PPL employee who writes, edits or corrects written materials. Supervisor's approval should be obtained prior to registration.

Classes will be held from 2 to 4 p.m. in the PLT Conference Room on May 14 and 15; May 21 and 22; May 28 and 29; and June 4 and 5. To register, call Joyce Lafharis at ext. 2685.

## Parking Problems 'Noted'

In recent weeks, a number of tickets have been issued to PPL employees for unauthorized parking in designated visitor spaces. Some of these tickets have been appealed because of unusual circumstances, including PPL emergencies, temporary handicap, or pick-up and delivery of heavy packages. In each case, the ticket would not have been issued if the driver had left a note on his windshield explaining why it was necessary to park illegally.

The Security personnel do not enjoy issuing tickets, but a number of complaints were received about a handful of employees who were flagrantly abusing restricted parking areas. Without a note or other authorization, the Security guard cannot tell a vehicle on bona fide business from one that is not.

To avoid future parking difficulties, *LEAVE A NOTE*. If you have any special parking problem that a note can't resolve, call Jim Kopliner (7-2-6688) for assistance.

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*The PPL Hotline is issued by the Princeton University Plasma Physics Laboratory, a research facility supported by the U.S. Department of Energy. Correspondence should be directed to PPL Communications Office, Aero Lab, James Forrestal Campus.*

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## Personnel People: Problem Solvers

Got a problem and don't know where to turn for an answer? Pick a number from this Personnel Department directory to get guidance or a solution.

Affirmative Action Program	Cathy Howard	3480
Apprentice Program	Al Drake	2047
Blood Bank	Eleanor Schmitt	2035
College Recruiting	Al Drake	2047
Co-op Programs	Cathy Howard	3480
Complaints/Grievances	Lenny Thomas	2052
Credit Union Information	Eleanor Schmitt	2035
Employee Records/Verifications	Eleanor Schmitt	2035
Exempt Employment	Chris Legaard	2046
Exit Interviews: Exempt	Chris Legaard	2046
Non-Exempt	Al Drake	2047
	Cathy Howard	3480
Financial Aid, Tuition Reimbursement	Eleanor Schmitt	2035
Job Bids & Postings	Cathy Howard	3480
Job Evaluations:	Angelo Candelori	2043
	Gary Kater	2045
Life Insurance	Eleanor Schmitt	2035
Long Term Disability	Eleanor Schmitt	2035
Medical Insurance	Eleanor Schmitt	2035
Non-Exempt Employment	Al Drake	2047
	Cathy Howard	3480
Orientation	Larry Holpp	2401
Personnel Policy	Steve Iverson	2041
Reception Areas	Barbara Norton	2050
Retirement Program	Eleanor Schmitt	2035
Sports Activities	Lenny Thomas	2052
Summer Employment	Cathy Howard	3480
Supervisory Training & Development	Larry Holpp	2401
Temporary Disability	Eleanor Schmitt	2035
Temporary Help	Rosemary Benson	2041
Wage & Salary Administration	Angelo Candelori	2052
Wage & Salary	Gary Kater	2045
Workers' Compensation	Eleanor Schmitt	2035
Suggestions	Lenny Thomas	2052



# HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

Vol. 1, No. 8

May 30, 1980

## Personnel Changes

A promotion, two internal transfers and a new employee have combined to give the Personnel Department a different look.

Sandy Birchmeyer, formerly Manager of PPL Employee Relations, has been promoted to Associate Director for Selection and Employee Relations. Her new post puts her in charge of all employee relations, selection and affirmative action functions of the laboratory.

Sandy holds a B.A. from the College of New Rochelle, and her previous experience includes working for the City University and the Mayor's Office of New York.

Joining PPL as Manager of Employment is Tom Sutton. Tom received his MBA in industrial relations from Purdue University, and was professional employment administrator for RCA in Princeton and Monticello, Indiana for seven years.

Catherine Howard, who joined the University in the President's office in 1973, is now a personnel recruiter. Cathy did undergraduate work in business administration at Rider College, majoring in industrial relations. She joined the Laboratory in November of 1974, and had previously worked in Dr. Melvin Gottlieb's office as Assistant to the Director.

Leonard Thomas, formerly financial manager in the PPL Administration Department, has become the new Supervisor of Employee Relations. He holds an associate degree in business administration from Mercer County Community College, and received his B.S. in business management from Fairleigh Dickinson University. He will handle employee complaints, grievances, suggestions, sports activities and other general employee relations areas.



*Sandy Birchmeyer*



*Tom Sutton*



*Cathy Howard*



*Len Thomas*

## New Hires



*Kathy Dunn joined the Laboratory on March 3, 1980 as a General Writer in the Communications Office. Kathy, who received her B.A. in mass communications from Douglass College, New Brunswick, was previously employed as a staff reporter for the Bound Brook Chronicle newspaper. She recently won the New Jersey State Bar Association Media Award for the second consecutive year.*

*Marjorie Barnett joined the Laboratory on March 3, 1980 as Manager of Telecommunications. Marjorie formerly worked in the Telecommunications Department on main campus for 14 years.*

## Technicians Trained In Leak Detector Maintenance

On Wednesday, May 1st, representatives of Veeco Corporation presented an all-day training session to PPL technicians from the electronics, vacuum, PLT, and PDX groups. The purpose of the session was to train PPL personnel in the maintenance and repair of helium leak detectors, which are used extensively on all vacuum systems around the laboratory.



*Taking part in the leak detector maintenance training were Fred Simmons, Timothy Ellis, Joe Bartolick, Gary Drozd, Howard Henry, Thomas Provost, Robert Mullen, Russell Apgar, Edward Pinelli, William Kineyko, Howard Richter, Harry Anderson, Robert Ericsson, George DePagnier, Randy Smith, Thomas Caro and, Veeco Corporation instructor, Roy Schnabel.*



*Roy Schnabel from Veeco Corporation (center) instructs Randy Smith (left) and Howard Henry (right) in leak detector maintenance.*

### P&R IMPROVEMENTS

In an effort to enable authors to process large amounts of paperwork faster, more efficiently and more professionally, Publications and Reports Center has acquired two new NBI 3000 word processing units with a dual printer. Each unit is equipped with both the English and Greek alphabets.

Demonstrations of the new equipment will be held daily during the next few weeks from 10 to 11 a.m. The Center operates from 8:30 a.m. to 4:45 p.m. Monday through Friday.



## Remote Cutter Test Successful At PPL

Over two years of research and development effort by Grumman Aerospace Corporation culminated on April 22nd in 1-H building with the first successful test of the TFTR vacuum vessel remote cutter. This was the first time a 360° cut around a cross-sectional segment of the stainless steel vacuum vessel was ever made by a remotely operated device. The remote cutter is the first of its kind in the world, and represents a significant development in PPL's remote maintenance program.

An important part of this program will be the ability to remove a section of the TFTR vacuum vessel, should it become damaged, and replace it with a new section. After tritium is used on TFTR, all maintenance on it, including this task, will have to be done remotely.

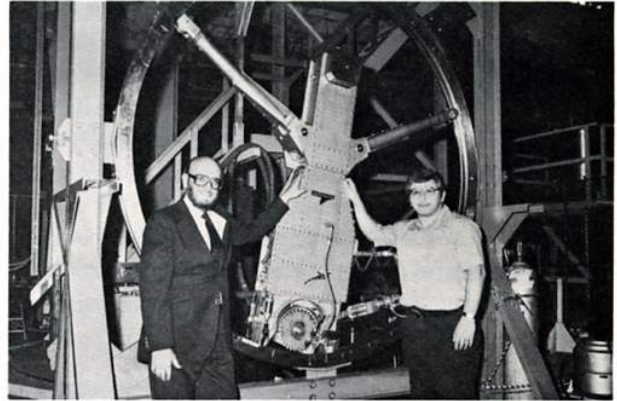
To facilitate remote handling, the TFTR vacuum vessel is comprised of 10 individual segments separated by specially designed parting joints. If removal of a segment of the vacuum vessel were necessary, the remote cutter would be folded and inserted into a port in the vacuum vessel by a manipulator on the outside of the vessel. It would be passed to a second manipulator on the inside, which would position the cutter and extend it to its full size. After the cutter severs the vacuum vessel at one parting joint, it would be moved by the in-vessel manipulator to the other side of the segment, and another cut would be made.

The severed vacuum vessel segment would be removed along with the two corresponding toroidal field coils and the adjoining shear panel to a work stand within the test cell. Here the damaged section of the vacuum vessel would be replaced, also by remotely operated devices. The entire segment would then be placed back on the machine and welded. The remote welding device is presently under development.

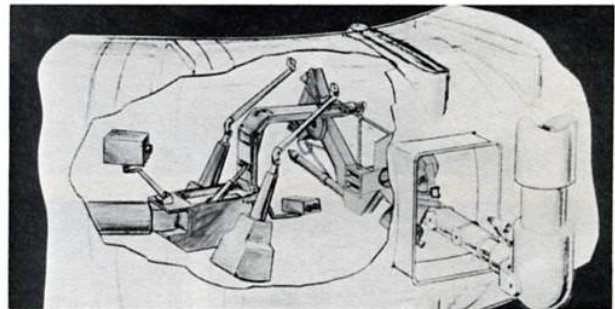
The task of designing the remote cutter for TFTR was made especially difficult because of the weight limitations imposed due to the limits of the manipulators. The entire cutter assembly could weigh no more than 400 pounds, a significant limitation since it is being asked to do the work of a conventional milling machine usually weighing thousands of pounds. A second difficulty imposed on the designers was the relative flexibility of the

vacuum vessel itself. Space limitations were also a major concern.

After removing it from its test stand, the next step in testing the remote cutter will be to install it on the M-3 mock-up, and use it to sever the vacuum vessel there.



*Erick Stern (left), Ebasco/Grumman Assistant Project Manager, and Pete Reganato, Grumman Remote Handling and Maintenance Engineer, involved with the recent successful testing, proudly display the TFTR vacuum vessel remote cutter. The device is contained within a section of vacuum vessel mounted on a test stand. The cutter was fabricated at Grumman's Bethpage, N. Y. plant before being delivered to PPL.*



*This artist's conception shows the outside manipulator passing the remote cutter, which is folded for entry through the vacuum vessel, to the in-vessel manipulator.*

## Canoeing/Rafting

Anyone interested in canoeing and/or rafting, please call Meg Gilbert on 2036 between 9 a.m. and 10 a.m.

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*The PPL Hotline is issued by the Princeton University Plasma Physics Laboratory, a research facility supported by the U.S. Department of Energy. Correspondence should be directed to PPL Communications Office, Aero Lab, James Forrestal Campus.*

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## Wine and Cheese Party

A Wine and Cheese Party was held in honor of National Secretaries Week last month. Approximately 275 secretaries and their bosses attended the party, held in the C-Site cafeteria. Party-goers consumed 10 pounds of assorted cookies, 12 boxes of assorted crackers, 50 pounds of assorted cheese and most of the wine punch (a mix of wine and ginger ale).

The day wasn't all play, however. Following the welcome from Steve Iverson, Millie Willerton and Larry Holpp passed out awards for completion of the lab's first technical typing course. Certificates went to Dolores Bergmann, Joyce Bitzer, Mary Ann Brown, Grace Emma, Glenda Fendrick, Linda Harmon, Marilyn Hondorp, Mary Kernahan, Ann O'Day, Pattie Pugliesi and Flo Sciortino. Special



certificates were given to course instructors Marianne Weissenburger and Elsie Ferreras. Millie Willerton and Bobbie Cruser (chairwoman of the Secretarial and Office Support Staff Committee) also received certificates for their work in organizing the course.

Numbers were distributed for door prizes by Flo Sciortino, and the lucky numbers were drawn by Steve Iverson, Larry Holpp, Harold Eubank and Dale Meade. Winners of the four hanging basket plants, supplied by Ken Tindall of the C-Site Computer Center, were Marj Barnett, Diane Driver, Becci Bell and Linda Harmon.

The day's festivities were organized by Sara Kent Paterson, with help from Len Thomas, Flo Sciortino, Pam Csira, Bobbie Cruser and Terri Temkin of the cafeteria.



## Woman's Bowling Banquet



Women's bowling league trophy winners smile for the camera. On left (l. to r.) are Terri Temkin, Christine Ritter, Sally Connell, Mary Alice Eubank and Sara Paterson. The winning team, the Bouncers (Bobbie Cruser, Ilse Gusciora and Kim Prutky, l. to r.) are pictured at right.



On May 21, 17 women came out of the alleys and into Prospect House for the first annual PPL women's bowling league awards dinner.

Four teams, with four bowlers each, competed for the league crown every Wednesday at Colonial Lanes. This year's first place trophy went to the Bouncers, led by captain Ilse Gusciora with team members Bobbie Cruser, Mary Jane Hollendonner and Kim Prutky. Kim also won high score honors, with a 232 performance.

Placing second in the final standings were the Guttersnipes, with captain Sara Paterson, Mary Alice Eubank, Carol Phillips and Janet Thorpe. The Checkmates, with captain Helen Livernoche and members Sally Connell, Madaline Curtis, Marsha Levin (part-season) and Linda Wurst (part-season) came in third. The Alleycats, captained by Gloria Pollitt and featuring Christine Ritter, Terri Temkin and Millie Willerton, rounded out the field in fourth place.

Although the Alleycats may have finished at the bottom of the standings, their bowlers were tops. Terri Temkin won the trophy for high game (195) and high series (443), while Sara Paterson and Christine Ritter received trophies for upping their averages by 59 and 29 points respectively.

A special award was given to Sally Connell as the league's outstanding substitute. Sally recorded a 137 average over 56 games.

Cash awards accompanied the trophies, according to league president/secretary/treasurer Millie Willerton. Millie will continue as league president, with Bobbie Cruser taking over the reins as secretary and Terri Temkin serving as treasurer.

The league is presently holding registration for next year's teams. Anyone interested in signing up for a team is asked to contact Millie, Bobbie or any team member.

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## Blairstown Benefit Begins

Raffle chance books for the benefit of the Princeton Education Center at Blairstown have been distributed at the laboratory through ticket chairman Ellie Weed. Prizes being offered include a \$500 "trip of your choice", a New York Fun Weekend worth \$250, a certificate worth \$75 in gasoline and a 10-speed bicycle.

The raffle is part of the fund-raising efforts for the center that will culminate in the Blairstown Potpourri. All funds are used to help support the Outdoor Adventure Program, which provides camping opportunities for youngsters aged 12 through 16 from low and moderate income families in the Princeton area. The program, also known as the Princeton Summer Camps, has been operating since 1909 and draws its staff largely from Princeton

University undergraduates.

The ticket committee is composed of Edna Willis, Sheryl Robas, Ann Golden, Marilyn Ellner, John Anastasio, James Turley, Lucy Lennon and Athene Kan.

Donations are also being accepted for the Potpourri, which will be held September 20 in Jadwin Gym. The Potpourri will feature sale items ranging from books and bicycles, plants and preserves to furniture and food. All donations to the Potpourri, which has raised \$30,000 for the center over the past five years, are tax deductible.

Those interested in obtaining chances or chance books for the raffle should contact Ellie Weed at ext. 2438. To arrange a donation for the Potpourri, contact Ellie or call the Princeton Education Center at Blairstown office at (609) 452-3340.



# HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

Vol. 1, No. 9

June 9, 1980

## PLT Reaches New Record High Temperatures

On Wednesday, May 21, PLT reached a new ion temperature mark of 7.1 keV, equal to about 82 million degrees C, surpassing its 1978 record of 75 million degrees. This high temperature was achieved at plasma densities of about  $1.5 \times 10^{13}$  per cubic centimeter and a global energy confinement time ( $\tau$ ) of about 25 milliseconds. A neutral beam pulse of 150 milliseconds was used; the tokamak discharge duration was about 0.8 second.

Three neutral beam lines were used in the experiment to inject energetic deuterium ions into the bulk hydrogen plasma. Total neutral beam power was about 2.4 MW.

According to Dr. Harold Eubank, Section Head, Neutral Beams, everything on the machine was operating well for this experiment. All three getters were working efficiently. The machine itself was very clean, achieving low impurity levels. In addition, each neutral beam line was operating at its highest power level ever.

In another development that week, PLT reached record high electron temperature increases from 1.0 keV to 2.5-3.0 keV at plasma densities of  $3 \times 10^{13}$  per cubic centimeter. About 3.2 MW of power were injected from four beam lines. Corresponding ion temperatures were about 4.5 to 5.0 keV.

## Credit Union Fights Inflation, Tightens Credit

Inflation is taking its toll everywhere, but Princeton University employees can reduce the pinch on their pocketbooks by investing in a money market certificate offered by their Federal Credit Union.

The 26-week certificates, available since May 1, require a minimum investment of \$10,000. They earn the highest allowable interest rate, a figure that is computed weekly. Call the credit union at 452-5038 for the current rate.

One year share certificates are also available for a minimum investment of \$500. The certificates pay 10.75 percent, with an annual yield of 11.513. The interest rates are guaranteed through May 31, and may change in June.

Certificates are compounded daily, with interest credited upon maturity. Credit union members may purchase two share certificates per month.

Despite the tight money market, the credit union is continuing to make loans to its members. In order to continue making those loans, however, the credit union's board of directors has instituted temporary controls on borrowing.

Interest rates on loans (other than share/collateral and guaranteed student loans) were increased to 15 percent as of April 24. A member's maximum indebtedness to the credit union was reduced to \$7,500 (excluding student loans) and the maximum length of loans was curtailed.

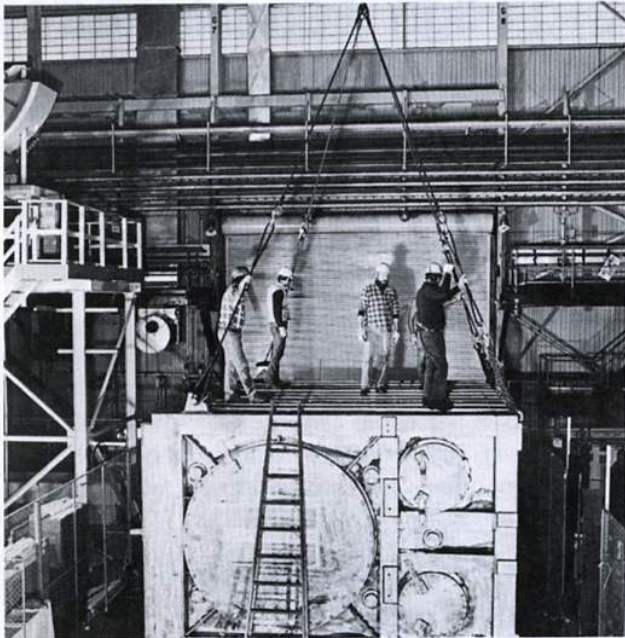
For a schedule of current interest rates and terms, call the credit union or visit their offices in the Armory, off Washington Road next to Palmer Stadium.

Board President Patricia Skarulis pointed out that no one can borrow money from the credit union until he saves. The credit union is open to employees of Princeton University, the Institute for Advanced Study, the Robert Wood Johnson Foundation, McCarter Theatre, Princeton University Press, Princeton University Store and Princeton Theological Seminary, and members of their immediate families.

For full details on the services offered by the credit union, or for an application, call the credit union office.

## TFTR Neutral Beam Assembly Underway at PPL

A major assembly operation is underway at PPL as the hardware and components for the TFTR neutral beam lines are delivered to 1-H from Lawrence Berkeley and Lawrence Livermore Labs and from industrial suppliers. Some components are also being fabricated in the University machine shop and at PPL. Full assembly of all neutral beam lines will be done here, as will all functional testing, including



*The 40-ton TFTR neutral beam enclosure being delivered to 1-H building.*

water flow, vacuum integrity, and cryogenic testing. Power testing of the neutral beam lines will be done after delivery to the Neutral Beam Test Cell at C-site.

The first components to arrive were the ion deflection magnet and its support structure, followed by the 40-ton stainless steel neutral beam enclosure that was delivered in March. The 3/4-inch thick, reinforced structure was manufactured by PX Engineering in Woburn, Massachusetts. With equipment installed, the unit will weigh about 70 tons.

Preparation of the assembly area and construction of the neutral beam assembly stand is complete. On the assembly stand, eight cryopumping modules will be constructed for each beam line. The cryopumping system is designed to keep the pressure in the neutral beam enclosure below  $5 \times 10^{-5}$  torr. The pumping occurs when molecules condense on the liquid-helium-cooled panels at very low temperature. These panels are guarded by liquid-nitrogen-cooled panels and chevron baffles. The eight modules will provide about 30 square meters of pumping surface.

The TFTR neutral beam lines are composed of modular assemblies to facilitate the use of remote-handling techniques. The assembly of the beam lines will continue at PPL with the first line expected to be complete by the end of this year.

## Symposium Scheduled

The eighth Fusion Technology Symposium will be held Monday, June 9 at 4 p.m. in Sayre Hall auditorium. Dr. Joel Hosea of the PPL Research Department will speak on RF Heating in tokamaks.

## Pedal Power

Afternoon joggers, move over – here comes the bike brigade!

For the second year, PPL employees in search of healthful exercise or between-site transportation will be able to sign out bicycles provided by the laboratory. In order to borrow a bike, go to the reception desks at either C-Site or the 1-E building at A-Site. Bicycles may not be used off campus, and cannot be kept out overnight.

Bicycles may be taken out from and returned to either site, however. Employee identification may be requested when taking a bicycle out.

In addition to the bikes, the Personnel Department is making available game equipment from 11 a.m. to 2 p.m. daily. Equipment for croquet, badminton, Frisbee horseshoes and takraw is available at C-Site, the Vacuum Shop, and Personnel; quoits are available at C-Site and Personnel; and horseshoes may be obtained at C-Site and the Vacuum Shop.

Checkers, chess and backgammon sets are also available at the C-Site receptionist and the B-Site Personnel Department.

Any questions about the equipment or suggestions for other games should be directed to Len Thomas at ext. 2052.

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# HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

Vol. 1, No. 10

June 16, 1980

## Director's Search Progress

*The following letter concerning the search for a new laboratory director was submitted by Princeton University Provost Dr. Neil L. Rudenstine.*

I am writing to bring all PPPL staff up to date on the progress of the search for a new Director. During the past few weeks, committees at the Laboratory and on main campus have been meeting regularly, on almost a weekly basis. All applications and nominations have been reviewed carefully, and the committees have agreed on a way of proceeding over the course of the summer. Because of vacation schedules, there will be a suspension of regular sessions until late August, but we remain hopeful that the search will be brought to a conclusion in the autumn.

## Service Awards Program

In order to recognize and reward dedicated PPL employees, the Employee Relations section of the Personnel Office has initiated a Service Awards program.

The initial awards ceremonies, which will begin shortly and run throughout the summer, will include employees with 5 to 24 years of service. In the future, service awards will be presented for 5, 10, 15 and 20 years of service to the laboratory. Employees with 25 or 35 years of service will be recognized by the University at a university awards function.

The service awards gifts will be presented to the employees by their supervisors or laboratory management personnel.

The program is designed to show appreciation for the years of service PPL employees have devoted to the furthering of the goals of the laboratory.

# Princeton Alumni Tour PPL -- LOB Opens



*Paul Snook points out the features of the PDX control panel (above) and the structures in the MG room (below) during the morning tour session.*



*Charley Bushnell, the first speaker to take the stage in the new LOB auditorium, emphasizes a point during his speech to University alumni.*

The first group of visitors through the portals of PPL's new lab/office building and auditorium were the Princeton University alumni and their families touring the lab as part of their June 6 reunion celebrations.

About 90 people were part of the morning tour group, which visited the TFTR gallery, PLT, PDX and the MG room. Their PPL guides were Charley Bushnell, Mike Pereira, Ray Helmich, Paul Snook and Jim Chrzanowski.

Sixty people took the afternoon tour, escorted by Erik Perry, Don Knutson, Mike Mozeleski, John Frankenberg and George Martin.





# HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

Vol. 1, No. 11

July 8, 1980

## IAEA Conference

Eight representatives of PPL, including Director Melvin B. Gottlieb, Program Director Harold Furth and Associate Director Paul Rutherford, are attending the eighth annual IAEA International Conference on Plasma Physics and Controlled Nuclear Fusion Research in Brussels, Belgium. The 10-day conference opened July 1.

Five papers are being presented by PPL personnel at the conference. They include "PDX Experimental Results", Dale Meade; "Linear and Non-linear Studies of High-Beta Tokamaks", Donald Monticello; "Transport Studies in the Princeton Large Torus", Wolfgang Stodiek; "Theory of Drift, Trapped-Particle and Alfvén Instabilities and Anomalous Plasma Transport", Liu Chen; and "Fast Wave Ion Cyclotron Heating in the Princeton Large Torus", Joel Hosea.

Dr. Hosea will also present a paper by the Japanese DIVA group, "High Efficiency ICRF Heating Experiments in DIVA".

## NOW Out Now

The premier issue of the laboratory's newsmagazine, PPL NOW, was recently mailed to all PPL employees. The magazine contains profiles of the people and programs at the laboratory. Anyone who has not received a copy should contact the Communications Office at ext. 2750.

The second issue of the magazine is in the planning stage, and reader comments, submissions, and suggestions for future features are welcome. Correspondence should be directed to the Communications Office, Aero Lab.

## Symposium Suspended

The Fusion Technology Symposium series has been discontinued for the summer months. The schedule will be resumed in September, with the date and speaker to be announced in a future issue of the Hotline.

## Van Pooling

In a continuing effort to conserve energy, the laboratory is conducting a survey of employee interest in a van pooling program.

Approximately 175 people have already responded to the survey, sponsored by the laboratory through DOE. Further information on the formation of van pools will be announced in a future issue of the Hotline.

Interested individuals should fill out the form below and mail it to Len Thomas, Personnel, B-Site by July 15.

I would like to be a

Driver       Passenger       Either

Name \_\_\_\_\_

Address \_\_\_\_\_

Nearest Major Cross Streets \_\_\_\_\_

Office Address: Bldg \_\_\_\_\_ Site \_\_\_\_\_

Office Phone \_\_\_\_\_

Start work \_\_\_\_\_ Leave Work \_\_\_\_\_

## Service Awards

The Personnel Office recently held a Service Awards ceremony for 105 employees with 20 to 24 years of service in the laboratory. PPL Director Dr. Melvin Gottlieb presented sterling silver pens to the award recipients.

Anyone who did not receive an award and believes he is eligible for one should contact Len Thomas at ext. 2052.

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# Picnic '80



Mother Nature seemed to be smiling on the laboratory Saturday June 14, producing a perfect day for the annual PPL picnic. Over 1300 people attended the event, which featured pony rides, a sandbox, a fishing pond, a space walk, and other kiddie rides for the younger set. The day's festivities also included balloon rides, a hayride, and dancing to music provided by a disc jockey from 6 to 8 p.m.

In addition to the catered food, picnic committee chairman Jerry Hart reported that revelers downed 34 kegs of beer, 15 kegs of soda and 24 gallons of wine. Attendees with the "munchies" consumed 200 pounds of peanuts, 72 pounds of

pretzels, 240 bags of potato chips, and 1800 ice cream treats.

Clown Millie Willerton entertained the youngsters with her "pet monkey" Bingo, and distributed 2,000 lollipops and 2,000 balloons during the afternoon.

Committee members for this year's picnic included Mary Alice Eubank, Bernie Giehl, Ann Golden, Millie Willerton, Art Chaykowsky, Joe Carson, Bobbie Cruser, Len Thomas and Cheryl Cargill.

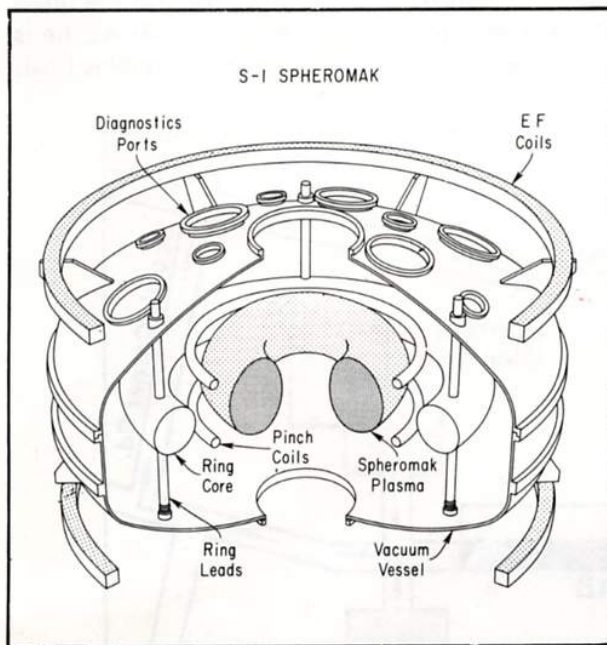
Anyone with comments on the 1980 picnic or suggestions toward next year's bash should submit their written comments to Mary Alice at C-Site.



## Initial Spheromak Results

One of the alternate magnetic fusion concepts being studied at PPL is spheromak, a sort of combination tokamak and mirror machine. In spheromak, the toroidal field is generated by a plasma current, and the poloidal field by current flowing in ring shaped coils. Together they keep the plasma in a roughly spherical (actually low aspect toroidal) shape, one of the best for confinement.

About one year ago Harold Furth, Tom Stix and Masaaki Yamada proposed a way of forming spheromak plasmas. To test the scheme, a small device called Proto S-1 was built. Its largest coil is about one foot in diameter, and the entire assembly fits on a table top. The results have been excellent.



*A diagram of the S-1 Spheromak device. The outer diameter of the ring core is about seven feet.*

At an average magnetic field strength of two kilogauss, an ion temperature of 300,000 degrees C, and a peak density of  $10^{15}$ , the plasma lifetime (the time the plasma was in the spheromak configuration) was as high as 30 microseconds. Because of Proto S-1's small size and low temperature, the theoretical limit on confinement time (set by magnetic diffusion processes) is only 50 microseconds. Since Proto S-1 was able to approach this upper limit, it appears there are no large scale instabilities in the device that would negatively affect the performance of larger machines.

In addition, the formation of the plasma has proceeded as predicted, indicating a good theoretical understanding of the machine's behavior. Beta ( $\beta$ ), the ratio of the outward plasma pressure to the confining magnetic field pressure, was in the range of 10%-50%. A working reactor will need a  $\beta$  greater than 5%, so this is also positive news.

Presently Jim Sinnis is directing the fabrication of the bigger S-1 machine, due to come on line in late 1982. S-1 will be located at C-Site in the RF bay. It will be six times larger than Proto S-1, will have a 6-9 kilogauss field and a plasma temperature of one million degrees C. Dr. Yamada believes that eventually it may be possible to build spheromak reactors that are smaller, simpler and less expensive than those using other magnetic confinement schemes.

## Symposium Slated

Dr. Klaus H. Berkner of Lawrence Berkeley Laboratory will be the speaker at the TFM Project Symposium, to be held August 11 at 4 p.m. in the LOB auditorium.

Dr. Berkner will speak on neutral beam development for TFTR and other fusion devices.

## Fire Fund

The Employee Relations Section is taking up a laboratory-wide collection for the John Woolsey family, whose Hamilton Township home was gutted by fire in June.

John, a Coil Shop employee, his wife and two children escaped injury in the blaze, which destroyed the interior of their house.

Donations of furniture, clothing or cash should be sent to Len Thomas, B-Site Personnel, ext. 2052.

## Road Closing

The Plainsboro Township Police Department has announced that Plainsboro Road between Fox Run Drive and Hunters Glen Drive will be closed for approximately one month for resurfacing and reconstruction, beginning August 1st.

Motorists traveling eastbound on Plainsboro Road should turn left onto Dey Road, then right onto Scotts Corner Road to Plainsboro Road to avoid the construction area.

Motorists traveling west bound on Plainsboro Road should turn right onto Scotts Corner Road, left onto Dey Road to Plainsboro Road. All detours will be properly marked.

Listen to radio station WHWH 1350 AM, Princeton, for daily updates.

## "Run for Fun"

Several laboratory employees with a passion for dashin' are planning a PPL "Run for Fun". Entrants would traverse a predetermined course during a designated lunchtime, and audience participation will be encouraged.

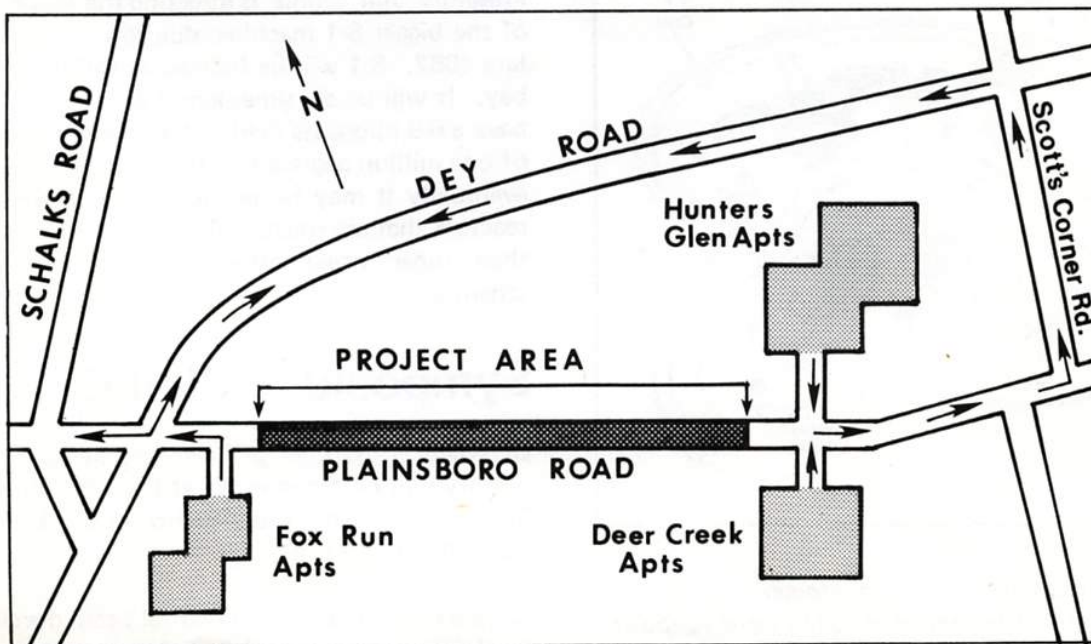
Anyone interested in entering the "Run for Fun" is asked to contact Ann O'Day at ext. 3377 during the day, or Bruce Brilliantine at ext. 3595 after 4 p.m.

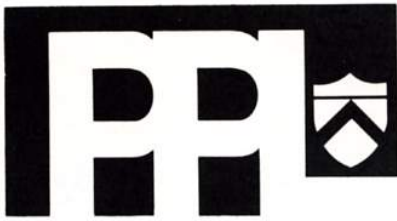
The date, time and place of the "Run for Fun" will be announced in a future issue of the Hotline.

## Handball Champ

Howard Eisenberg of the laboratory's professional technical staff successfully defended his doubles title at the National U.S. Handball Association One Wall Championship tournament, held recently in New York.

Eisenberg, partnered with Joel Wisotsky of Long Island, captured the championship from a field of 200 players. In his 23 years of handball competition, the Plainsboro resident has reached the finals of a national tournament 26 times. At 41, he is the oldest player to win a national doubles final.





# HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

Vol. 1, No. 13

August 8, 1980

## Neutral Beam Injectors Operate on PDX

Two neutral beam lines operational on PDX have been injecting about 2 MW of power into diverted plasmas. Both electron and ion heating occur but still need to be quantitatively assessed. Impurity influxes have been encouragingly small, despite the near perpendicular injection that is used on PDX.

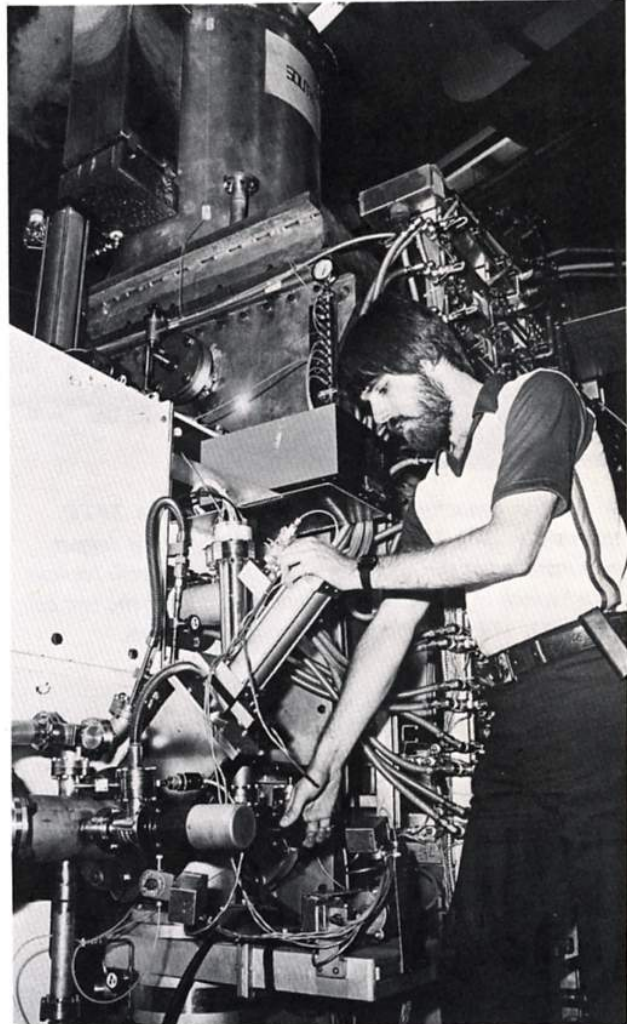
When the neutral beams are activated, there has been a noticeable drop in plasma density. One explanation for this density drop may be the fact that the additional heat in the outer plasmas area causes it to flow more readily around the divertor and onto the neutralizer plates. To counteract this, additional gas is pumped into the vacuum vessel during beam operation.

Experiments over the next few months will continue to center on the PDX goal of defining the effect of the divertors on impurity behavior, but other phenomena are under study as well. A particularly interesting observation is that the outward plasma flow is much greater on the "outboard" side of the plasma than on the "inboard" side.

Plasma magnetohydrodynamic (MHD) properties will be studied using a soft X-ray analysis program developed on PLT. CO<sub>2</sub> laser scattering and TV Thompson scattering diagnostics are being developed that will aid in measuring plasma position, shape, and disruptions. Optics are in place for the Thompson scattering diagnostic, and the programming has just been completed that will enable it to start generating plasma profiles.

## Office Relocations

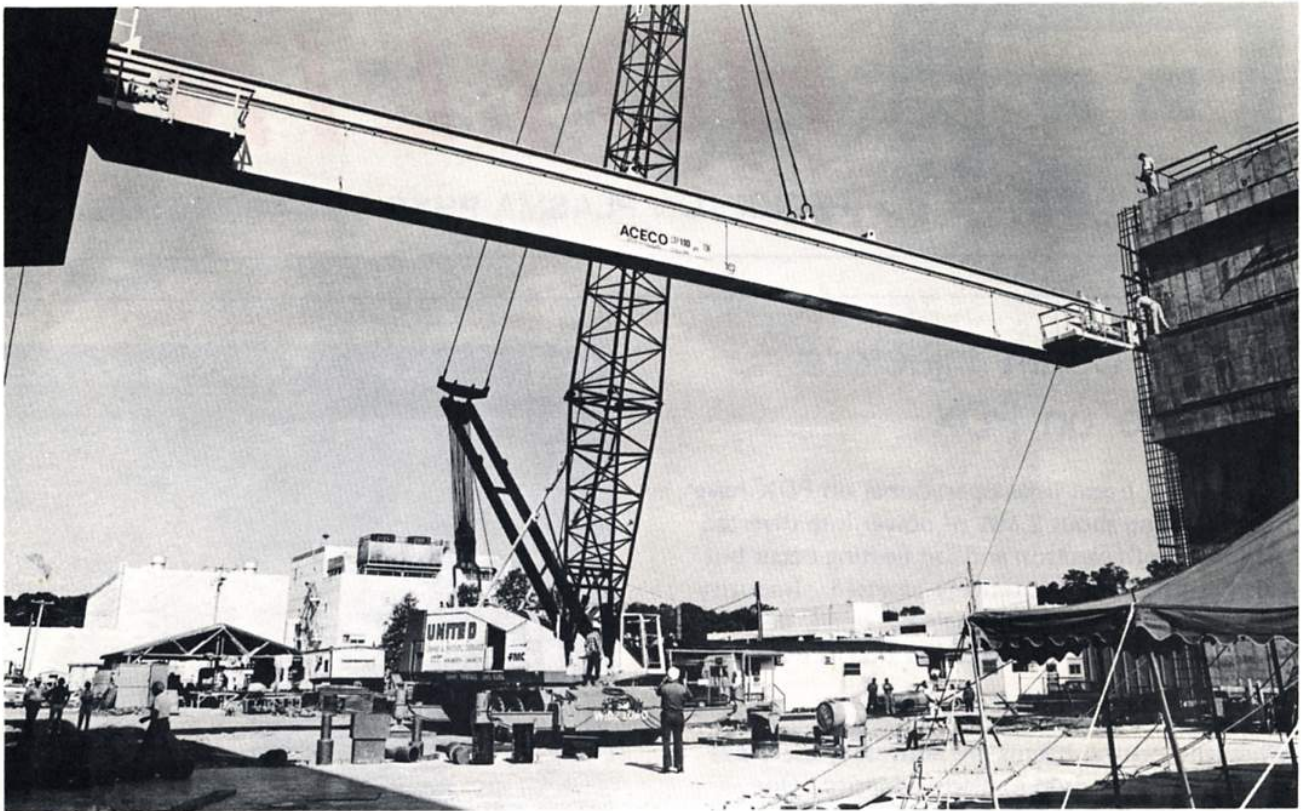
The Finance and Accounting Divisions have moved to the 1-E building on A-Site. The new offices are located in the former ground floor computer center.



*Mike Williams adjusts a vacuum valve on PDX's south beam line.*

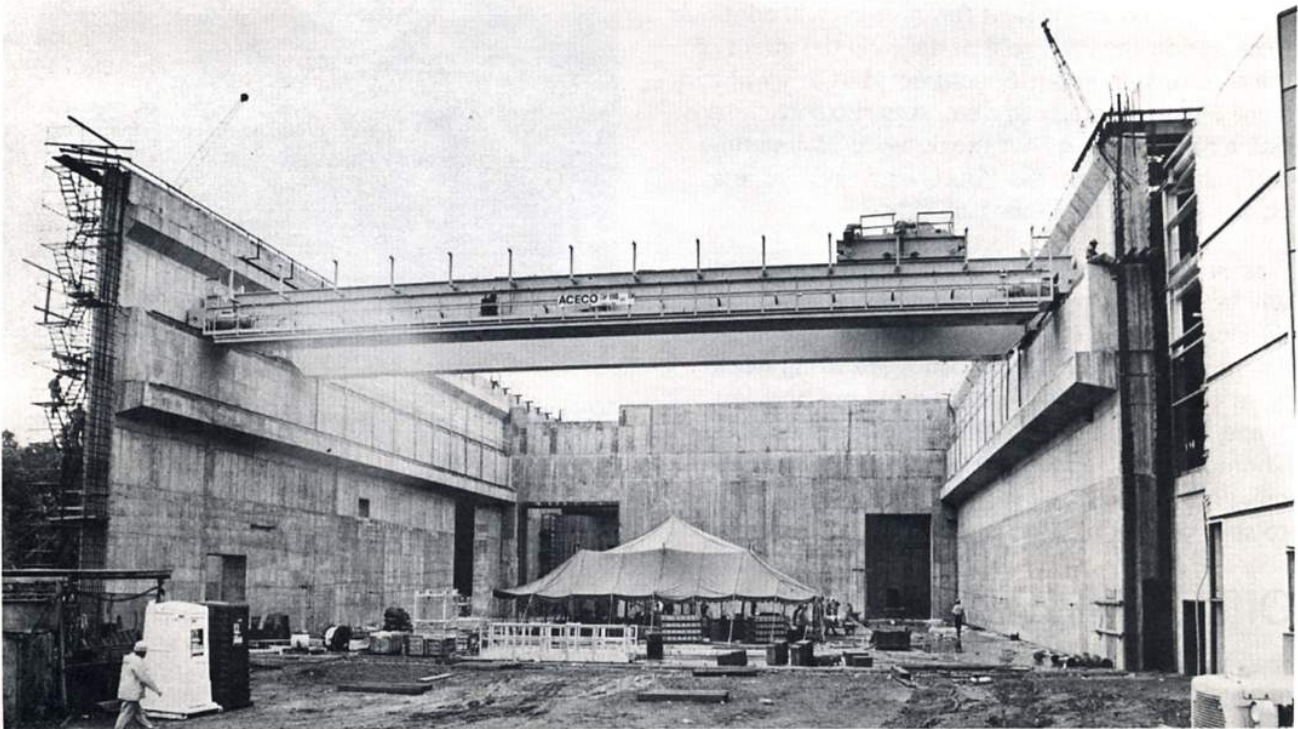
## Visual Aid Aid

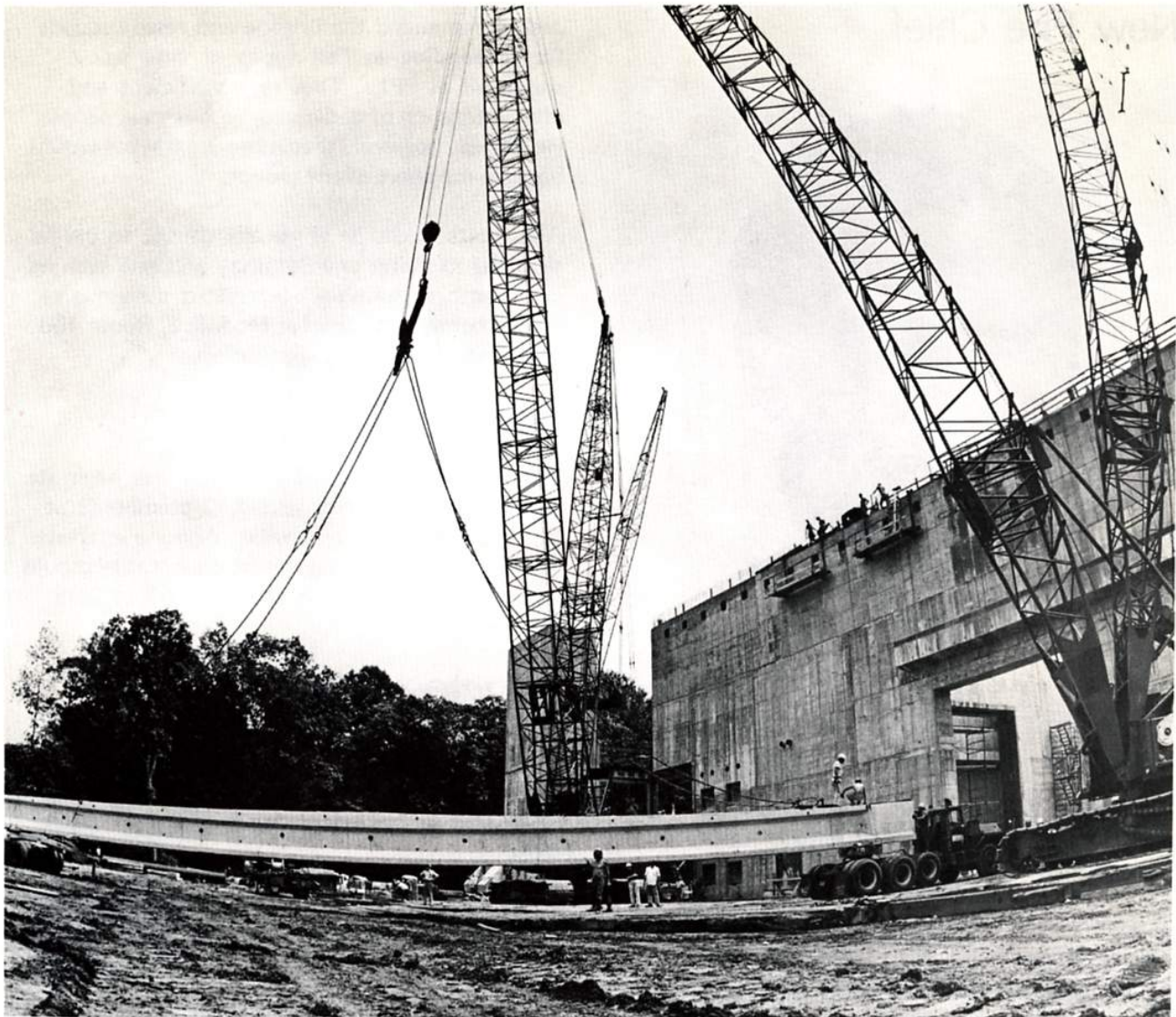
Planning a slide presentation? You can give your slides more impact (and save your audience from eyestrain) by following the tips contained in the Kodak brochure, "Effective Lecture Slides". The pamphlet is available from the Communications Office, ext. 2750.



*A 110-ton capacity crane was installed in the TFTR test cell on July 15, 16 and 17. The crane, the largest ever installed at the laboratory, is mounted on rails located on a haunch in the reinforced concrete walls of the test cell. Its span is 114 feet, and the rail length is 150 feet.*

*The crane will remain permanently in the test cell and will be used to install machine components, including the vacuum vessel, the coils, and the neutral beam injectors. It will also be used for moving parts and equipment during the operating lifetime of TFTR.*





*Workmen prepare to unload first concrete beam from its delivery truck. The beam supports its own weight while it is on the truck.*

## Roof Construction Begins

A new phase in the construction of the TFTR test cell was reached on July 30 when the first roof support beam was put in place. There are 69 beams, made of prestressed concrete by Eastern Prestress in Pennsylvania. Each support is 114 feet long and weighs 55 tons. The supports are being shipped to Princeton by a special truck, which has a rear wheel that can be steered by the man in the cab.

Workmen hope to put up at least four supports a day, thus finishing by late August. After this is done, the spaces between the beams will be filled with more concrete. Cables will then be used to tie the supports in the roof together. Finally, the roof will be waterproofed with asphalt.

Pre-stressed concrete is used in many applications including bridges and concrete reactor domes. In the TFTR test cell roof, the beams are also post-tensioned. The supports have a long channel running through them lengthwise. A cable is run through the channel, stretched and then steel plates are attached to the ends of the steel strand. The plates will then be pushing on the ends of the beam, compressing it. If a weight is put on the roof the supports will bow, stretching the bottom of the beam and causing a (outward pulling) tensile stress there. But the beam is already under a compressive stress, so the tension is now merely partially offsetting the already applied compression. In this way, concrete may be used in places previously impossible.

## New Fire Chief



PPL welcomed a new fire chief this month, when Jack Anderson took over the reins of the fire brigade, first aid and heavy rescue squads.

Jack, a resident of Bricktown, recently retired after a 20-year stint as a fire marshal/police officer with the Port Authority of New York and New Jersey. Fifteen of those years were spent working at the Newark International Airport.

Jack is a member of the National Fire Protection Association, the International Association of Arson Investigators, and the Fire Marshalls Association of North America. As of July 7, he became chief of PPL's 32-man fire brigade, first aid squad and heavy rescue squad. The groups share two fire pumpers, two chemical trucks and an ambulance.

While administration will be the chief's highest priority, he intends to promote the first aid and fire prevention training for all laboratory employees. Fire safety evaluations of all laboratory structures, reorganization of the brigade and continuing training are also goals for Chief Anderson.

Jack commended the brigade and rescue squads for responding to "all types of emergency situations at PPL. They're a proficient and efficient bunch of dedicated, enthusiastic people." He hoped, however, that more employees would become members of the groups.

Applicants should be physically fit, and would be required to spend one Saturday and one evening per month in training. Interested individuals should contact the chief at Module 2, Room 158 or on ext. 3166 for an application.

## Bowling Resumes

The PPL Women's Bowling League will begin its second season on Wednesday, September 3 at Colonial Lanes, Lawrenceville. Anyone interested in joining the league or becoming a substitute should contact Millie Willerton at ext. 3303 or Sara Paterson at ext. 2662.

## Volunteers Sought

Mary Ann Brown is asking for volunteers to help make handcrafted items for sale at the Blairstown Potpourri, scheduled for Jadwin Gym in September.

Anyone interested in helping out is invited to join Mary Ann and her crafty cohorts every Thursday from noon to 1 p.m. in the "Commons", located on the second floor of the LOB west wing.

Yarn, remnants of material, thread and polyester filling are also needed for several projects. If you can donate any of these goods, please contact Mary Ann Brown at ext. 2103 or Millie Willerton at ext. 3303.

Chances are also being sold for a raffle to be held during the Potpourri. Chances are available from ticket committee members Edna Willis, Sheryl Robas, Anne Golden, Marilyn Ellner, John Anastasio, James Turley, Lucy Lennon and Athene Kan.

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*The PPL Hotline is issued by the Princeton University Plasma Physics Laboratory, a research facility supported by the U.S. Department of Energy. Correspondence should be directed to PPL Communications Office, Aero Lab, James Forrestal Campus, ext. 2750.*

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# HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

Vol. 1, No. 14

September 5, 1980

## FTS System

Marjorie Barnett, manager of Telecommunications, aims to teach a simple equation to all laboratory employees: PPL plus FTS equals lower telephone bills.

Marge is assisted by chief operator Helen Pesce and office assistant Mal Pulaski. Before coming to the laboratory in March, Marge worked in the main campus Telecommunications Department for 14 years.

The department itself is responsible for the ordering, processing and billing for all telephones within the laboratory -- approximately 1400 units at present. The department also serves as laboratory liaison to the telephone company, coordinating installation of new units and repairs for old ones.

Marge reports that approximately one-third of PPL's telephone bills consist of toll call charges. She contends that those charges could be significantly reduced by laboratory-wide use of the Federal Telecommunications System (FTS).

"If people would regard using FTS as a personal challenge," Marge believes, "they could cut their phone bills in half. You can call everywhere in the country by FTS, and there's nothing about the system to be afraid of!"

The laboratory is charged a specific sum for the use of the FTS lines, which provide economical long-distance telephone capability. Using the system is often as easy as dialing a one-digit access code, or contacting the FTS operator for assistance.

"There seems to be some kind of mystique about the system," Marge feels. "The majority of laboratory employees don't realize how easy FTS is to use. Consequently, they think it's too big for them to cope with. But if they're interested enough to make a personal effort to use FTS,

they'll see an immediate reduction in their phone bills. It's just a matter of becoming accustomed to using the system and thinking in terms of it."

In an effort to rectify the situation, Marge will be presenting a program on the use of the telephone system to the Secretarial and Office Support Staff in the fall. She also recommends that employees look over their FTS National Telephone Directories, and refer any questions on use of the system to the Telecommunications Department.

"If you're not comfortable with the system", Marge added, "then you tend not to use it, and that means you're not using your telephone to its full capacity. The Telecommunications Department is here and ready to help you, with any questions on any aspect of phone use."

In fact, help -- and smaller phone bills thanks to FTS -- are just a phone call away.

## ERC Election Process

Not to be outdone by the recent national conventions, the Employee Representatives Committee (ERC) is preparing for a nominating 'convention' of its own.

Nomination forms have been sent to laboratory employees, and are due back to the committee by September 5. Nominees will then be contacted to ascertain whether each is willing and able to serve on the committee.

Those accepting nomination will be featured in a special election issue of the Hotline prior to the Sept. 16 election. Polls will be located at C-Site and in Sayre Hall.

Anyone who has not received a nomination form or who would like further information on the ERC may contact election subcommittee members Sally Connell (ext. 2689), Phil Thompson (ext. 2226), Millie Willerton (ext. 3303) or Bill Walker (ext. 3028).

## Construction Site Visitors

Construction sites are off limits to most PPL personnel. Too many laboratory employees are sight-seeing in new buildings and hazardous areas.

Some PPL employees have been authorized to go on site to perform bona fide work and inspections. These people should check in at the Giffels trailer prior to their visit. If employees have work to do, tests to perform, or need to open or close switches, they should specifically identify these tasks to Giffels.

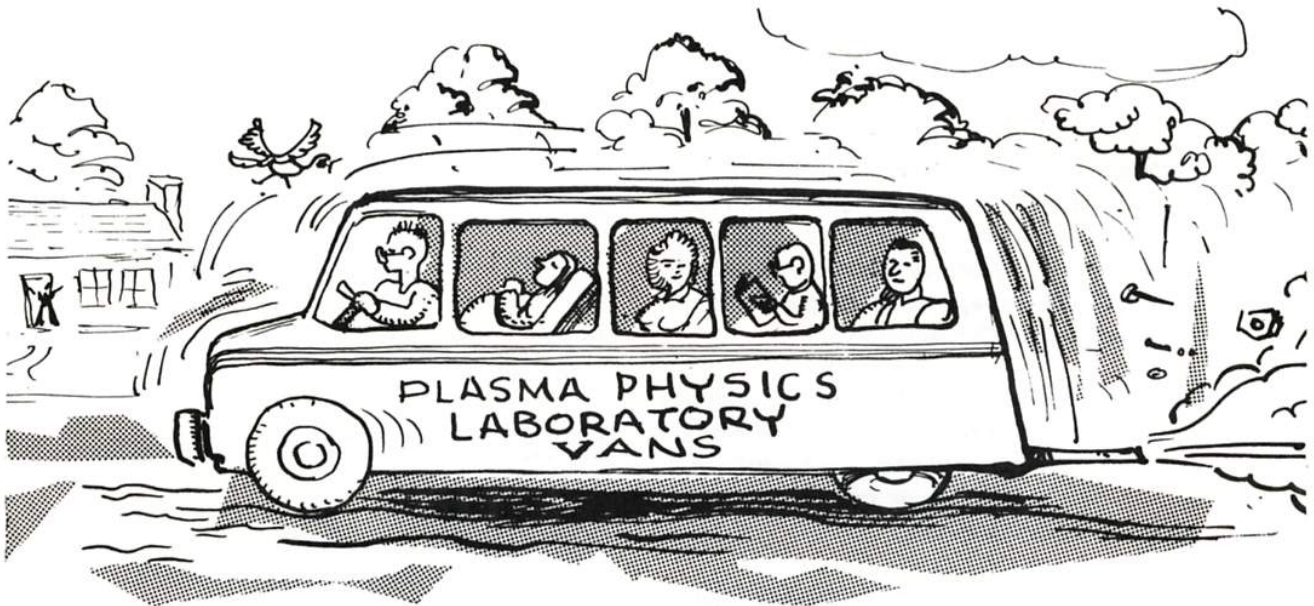
Any person who must go on site outside of working hours should check in at the Security Office prior to entering the site.

## Volleyball

Anyone interested in participating in an intramural volleyball program, please call Dave Maruso at ext. 3068.

## Library Relocation

For the next five months, the PPL Library will be relocated to the conference room on the first floor of the LOB building. The library offices are located next to Photo Lab at C-Site.



## Van Pooling

Several vans made their maiden voyages Monday as the laboratory began a van pooling program, sponsored by the Employee Representatives Committee and DOE.

Approximately 175 people responded to the van pooling survey conducted earlier this year. Van pools have formed in the Levittown, Burlington-Mount Holly and Bricktown areas, with several vans on the road Monday. Additional routes to various destinations are currently being planned.

Van passengers are picked up at a central staging area by the van driver, who takes the vehicle home

daily. All passengers are required to pay a monthly van pool fee, while the driver rides free. However, the driver must keep ridership and payment records on the van pool, maintain the van and bring it in for periodic maintenance and service checks.

Additional van pooling surveys will be conducted in the near future. For further information on the program, contact Len Thomas at Personnel, B-Site, ext. 2052.

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# HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

Vol. 1, No. 16

September 19, 1980

## ERC Election Results

The following individuals were elected to the Employee Representatives Committee (ERC) after voting held September 16. A total of 513 employees cast ballots in the election.

<b>ADMINISTRATIVE:</b>	Sally Connell Alan Upperco	Alternates:	Marc Dickler Ernie Heinze } Tie Dave Soler }
<b>LAB &amp; SHOP:</b>	John Anastasio Leon Jackson Dave Maruso Mary Ann McBride Hector Morales Sam Pellitteri Bob Popp Roland Snead	Alternates:	Henry Swiderski Frank Tiffenbach John Semler Frank DiBella
<b>OFFICE/SECRETARIAL/ CLERICAL:</b>	Patti Conover Pam Csira	Alternates:	Glenda Fendrick Dale Hollendonner
<b>RESEARCH:</b>	Greg Rewoldt Greg Schmidt	Alternates:	John Coonrod Gary Taylor
<b>PROFESSIONAL/ TECHNICAL:</b>	Dan Huttar Larry Michaels Marilee Thompson Philip Thompson	Alternates:	George Martin Don Hay Dave Mullaney Holt Murray
<b>TECH ASSOC/UNIT SUPR/SPECIALIST:</b>	Mike Capone Don Muschal	Alternates:	George Beauregard Sam Hand

There will be a joint meeting of the incoming and outgoing committees September 30. The first meeting of the incoming and outgoing committees is scheduled for October 8.

## Fire Prevention Week

Fire brigade building evacuations, heavy rescue drills and first aid demonstrations are among the activities PPL fire chief Jack Anderson has planned for National Fire Prevention Week, October 5 through 11.

On October 6, the fire brigade will stage a practice evacuation of A-Site. C-Site will be evacuated on October 8, which will also include a heavy rescue drill demonstration. B-Site will be evacuated by the fire brigade on October 10.

During the week, the first aid squad will be offering blood pressure checks and walk-through tours of their ambulances. Various pieces of brigade and squad equipment will also be on display, and fire prevention materials will be available throughout the week.

## SOSS News

The Secretarial Office and Supporting Staff (SOSS) Seminar Committee had two very good reasons to celebrate at their meeting September 9: a new chairwoman and the start of their sixth year of existence.

Flo Short has been elected chairwoman of the group, and Sara Paterson was elected vice-chairwoman. Helen Quinn and Muriel Strohl will serve as recording secretary and corresponding secretary, respectively.

Committee members include Pam Csira, Edna Willis, Anne Golden, Dolores Bergman, Olga Bennett, Kay Finch and Ann O'Day.

Robert Smart, General Manager of Facilities, and John Wade, Associate Head of Administration, were guests at the luncheon/meeting, catered by the B-Site Cafeteria.

## Relocation

As of September 22, the Communications Office has moved from the Aero Lab at B-Site to Module 2, C-Site.

All telephone extensions for Communications Office employees remain the same.

## Card Access System

In addition to telling others who you are, your PPL employee identification card can now be a real door-opener for you.

A card entry access control security system was activated at the laboratory September 8, making it impossible to gain entry to certain areas after working hours without authorization. Thus, employees are being required to wear and display their ID cards at all times.

Exit from controlled areas will not be impeded, and the system is being supplemented by foot patrols by uniformed officers throughout the laboratory.

A full explanation of the system and a list of card reader stations was sent to all laboratory personnel. For further information, contact the Security Department at ext. 6688.

## Women's Bowling

The Bouncers, paced by captain Ilse Gusciora, rolled past the competition and into first place after the first week of play in the PPL Women's Bowling League. The 34-week season got underway September 3.

Other teams in the league include the Guttersnipes, led by Sara Paterson; the Alleycats, with captain Chris Ritter; and the Strike Four, led by Sue Wilkinson.

The league also elected officers for the new year. League president is Mary Alice Eubank, Bobbie Crusier was chosen as secretary, and Terri Tempkin was elected treasurer.

The teams bowl every Wednesday from 6:30 to 9 p.m. at Colonial Lanes. Anyone interested in substituting for the league should contact Mary Alice at ext. 2555 or Bobbie at ext. 2101.



## New Hires

*PPL welcomed a new Associate Head of Administration last month when John W. Wade was appointed to the post August 15. He has served as a management consultant, an investment banker and chief financial officer of an Alcoa subsidiary. His most recent position was as Vice President-Finance of American District Telegraph Company, the largest manufacturer and marketer of electronic security systems and service.*

*His new duties include general management responsibilities for Finance and Accounting, Procurement, Management, Information Systems and Material Control. His office is Room 338 of the LOB, and he may be contacted at ext. 2814.*

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## Art Exhibit

The Squibb Gallery will begin its ninth season September 28 with a collection of works by state artists, "New Jersey Selects: Images and Visions." The exhibit will continue through November 2.

"New Jersey Selects" will include painting, sculpture and mixed media work by 17 artists. The variety will range from Walter Darby Bannard's abstract paintings and George Segal's sculpture to the optical oils of Richard Anuszkiewicz and Mel Leipzig's figurative acrylics. Clarence Carter, James Kearns, Gregorio Prestopino, Robert Birmelin and Lois Dodd are other prominent artists represented in the exhibition.

An invitational opening for the exhibit on September 27 will benefit New Jersey Public Television. The evening will be hosted by Governor Brendan Byrne, Honorary Chairman of NJPTV Benefit Committee.

The Squibb Gallery, which opened in 1972, is recognized as one of the leading corporate fine-arts galleries in the nation. It is located in the world headquarters of E.R. Squibb & Sons, Inc., an international pharmaceutical company, on Route 206 three miles south of Princeton. The gallery is open from 9 a.m. to 5 p.m. Monday through Friday, with extended hours until 9 p.m. on Thursday. Weekend hours are from 1 to 5 p.m.

The next exhibition at the gallery will be "New Jersey's Pine Barrens", featuring the color photographs of Princeton's Richard Speedy and opening on November 16.

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# "Run for Fun"

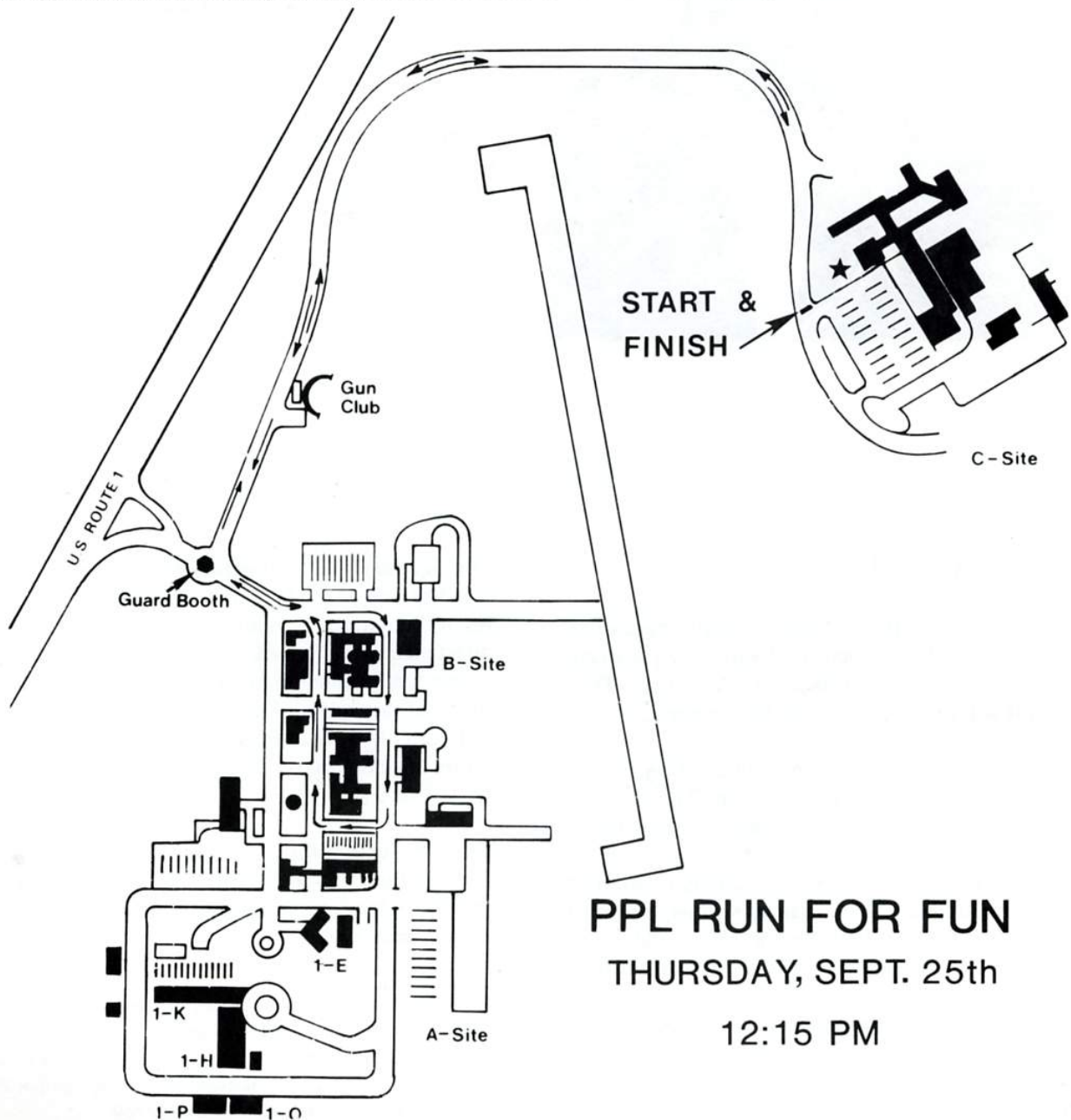
Bipedal power will be the order of the day Friday September 26, when the PPL "Run for Fun" gets underway at 12:15 p.m.

Entrants will follow a two-and-a-half mile course, beginning and ending on the main road by Module II. Runners will continue on to B-Site's Guggenheim building, turn left to the Gas Dynamics building, and return to the start/finish point. Signs will delineate the route on the day of the race, and

maps of the run: will be posted throughout the laboratory. Refreshments will be available for parched participants and their cheering sections at the finale of the event.

Approximately 40 employees have signed up for the race so far. Last-minute entries are also welcome; anyone signing up by noon on Thursday September 25 can pace with the pack.

For further information on the "Run for Fun", contact Bruce Brilliantine at ext. 3377.



**PPL RUN FOR FUN**  
THURSDAY, SEPT. 25th  
12:15 PM