HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

Vol. 3, No. 1 October 19, 1981

ERC ELECTION RESULTS

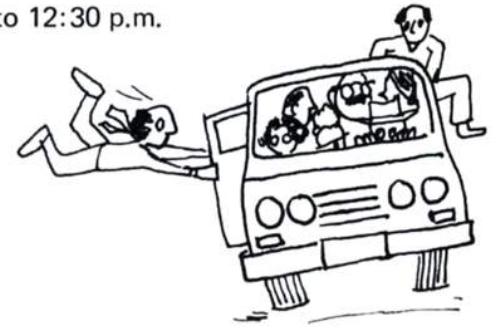
The following individuals were elected to the Employee Representatives Committee (ERC) after voting held September 22:

ADMINISTRATIVE:	Pam Csira Johnson	ext. 2205
	Doug Steacy	ext. 3539
	Alternate: Marjorie Barnett	ext. 2694
ENGINEERING & SCIENTIFIC STAFF:	Larry Michaels	ext. 2323
	Tom O'Connor	ext. 3142
	Julie Rossmassler	ext. 2432
	Charles Staloff	ext. 2667
	Alternate: Don Hay	ext. 2307
	Alternate: Judy Malsbury	ext. 2415
LAB & SHOP/ MAINTENANCE/DRAFTING:	John Anastasio	ext. 3179
	John Byaesko	ext. 3068
	Tom Hurley	ext. 3107
	Leon Jackson	ext. 3068
	Mary Ann McBride	ext. 2528
	Steve Ragolia	ext. 3098
	Roland Snead	ext. 3178
	Alternate: Nelson Rainier	ext. 3067
	Alternate: Janet Felt	ext. 2558
OFFICE/SECRETARIAL/ CLERICAL:	Chris Ritter	ext. 2660
	Eleanor Schmitt	ext. 2046
	Alternate: Suzen Bayer	ext. 2751
RESEARCH:	Kingston Owens	ext. 3181
	Greg Schmitt	ext. 3167
	Alternate: Charles Karney	ext. 2607
SENIOR LAB & SHOP:	Mike Capone	ext. 2316
	Don Muschal	ext. 3176
	Alternate: Mel Gensamer	ext. 2502

Four hundred and ninety employees cast ballots in the election, comprising 41 percent of the laboratory's eligible voters.

Van Pooling Meeting

A meeting on van pooling will be held October 23 in the M.B. Gottlieb auditorium from 11:30 a.m. to 12:30 p.m.



The van pooling project is a joint effort by employees from PPL and the Forrestal Center companies to make group transportation available. Van pools are being coordinated, and will be operational in the very near future.

All pertinent information, including ridership and costs, will be discussed at the meeting. Anyone interested in van pooling and/or car pooling is urged to attend.

TFTR Tours–A Reminder

PPL employees interested in seeing the nuts and bolts of TFTR can visit the construction site on the Wednesday afternoon tour program. Tours leave at 3:15 p.m. each Wednesday from the LOB lobby, where hardhats are issued. Since the TFTR site is a construction area, hardhats must be worn at all times. Tour members should not wear sandals, open-toed shoes or high heels, and are expected to stay with the group.

Tours are limited to *PPL personnel only,* with a maximum of 15 employees per tour. Reservations are required; no more than three people from the same department should sign up for a single tour.

To reserve a space on the Wednesday tour schedule, call Suzen Bayer, Information Services Department, ext. 2751.

Publication Schedule

Although the HOTLINE is currently being published twice a month, many employees have requested a more concrete publication schedule. In answer to that request, the HOTLINE will now be published during the first and third week of every month. Since the publication schedule is governed by the amount of publishable material available, however, the schedule may change without notice.

The HOTLINE staff would like to remind readers that suggestions for articles or PPL PEOPLE features are always welcome. Information for any issue should be received two weeks in advance of publication. For further information, contact the HOTLINE at ext. 2754.

Robert Goodwin of the Princeton University Security Department has been made an Administrative Assistant in that department. Goodwin, who is in charge of the uniform security division at Forrestal Campus, has been with the University for nine and a half years.

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 Information Services, Module 2, C-Site, James Forrestal Campus, ext. 2754.

Benefits Information

If you are a monthly-paid employee, you may make voluntary contributions to your existing TIAA-CREF contracts by salary deduction or reduction, or you can open up a Supplementary Retirement Annuity (SRA) contract.

If you are a bi-weekly employee, you cannot contribute to the bi-weekly pension plan. You may, however, open your own TIAA-CREF contracts.

If you make contributions to TIAA-CREF by salary *deduction,* you are paying tax on the money as it is being contributed. There is no limit on the amount you can contribute through salary deduction. If you make contributions to TIAA-CREF through salary *reduction,* you are deferring the federal income taxation of that contribution until you take the money out at retirement when, presumably, you will be in a lower income tax bracket. There are limits on the amount you may contribute through salary reduction; upon request, the Office of Personnel Services will calculate an employee's maximum allowable reduction.

If you make contributions to TIAA-CREF through an SRA, the money can be withdrawn at any time and, if you wish, in a lump sum. Contributions made to TIAA-CREF through the regular annuity remain in the contract until you retire and can only be received as an annuity in equal monthly payments.

Questions about TIAA-CREF or setting up retirement annuities should be referred to Roberta Gernhart at ext. 7-2-3315.

Schedule Change

On November 2, there will be a major change in PPL's janitorial cleaning routine. This change is the result of a recommendation by an outside consultant, made to improve the efficiency of the laboratory's janitorial program and to conserve energy.

The entire janitorial workforce will be on 100% day-shift, with the majority working from 6 a.m. to 2:30 p.m. and the balance on duty from 11 a.m. to 7:30 p.m. This split shift is necessary due to "noisy" or heavy duty cleaning, which can only be accomplished during the off-hours.

In order to make this transition as smooth as possible and with the least inconvenience to all, employee patience and cooperation are required. Problems or questions should be directed to Maintenance Control Center at ext. 3092.

For Sale

Golden Retriever puppies, AKC registered, champion bloodlines, reasonably priced. Great with children, makes ideal family pet. Contact Alan Upperco, ext. 3404.

Thank You

The Laboratory wishes to thank the 80 hardy souls who donated blood during the Bloodmobile's recent visit to the campus.

Staff Day

Staff Day for all bi-weekly employees will be held November 7. Anyone who has not received an application for the event should contact Meg Gilbert in Personnel, ext. 2036.

Emergency Services Notes

The PPL Emergency Services Unit responded to a total of 49 calls during fiscal year 1981. According to statistics compiled by Fire Chief Jack Anderson, 36 first aid calls were answered, along with nine fire calls, three fuel spills and one chemical spill.

Chemical Cautions

Health and safety information on chemicals obtained through PPL stockrooms will now be distributed through Material Safety Data Sheets (MSDS), now available at both the B and C Site stockrooms.

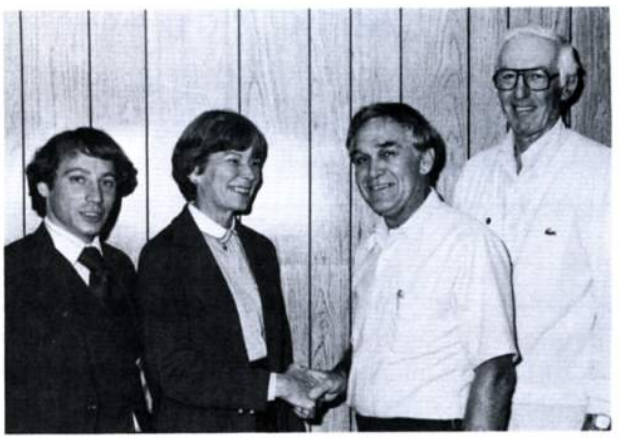
The system has been developed to more fully inform lab employees of the conditions under which a relatively harmless substance may become hazardous. For example, the solvent Inhibisol is commonly used throughout the laboratory with little health hazard. When exposed to high temperatures or ultraviolet light from arc welding, however, it emits phosgene and hydrogen chloride gases—both very toxic and corrosive.

MSDS's contain information on fire and explosive hazards, reactivity, health hazards, spill-leak and disposal procedures, and special protection or precautions necessary. The sheets should be requested from the stockroom staff, and further information is available from Ken Semel of Health and Safety, ext. 2531.

Singles Social

The Princeton University League's monthly singles wine and cheese social will be held November 12 at 5 p.m. in the Fine Tower faculty room. All single members of the University faculty and staff are invited to attend.

Golf League Season Ends



Princeton University Golf League former treasurer John Tarnecki and former president Nan Jones (left) hand the reins of the league over to new president Dick Shamon and new secretary Bill Ernst (right). Not pictured are former secretary Frank Bennett and new treasurer Bud Bosley.

The Princeton University Golf League held its fall tournament and annual banquet on September 21 at the Forsgate Country Club. Forty-two major prizes were awarded by league president Nan Jones, who also awarded several door prizes.

The season section winners included Bob Bonser and John Tarnecki, Section A; Al Casini and Roy Crosby, Section B; Gene Evans and John Tiscione, Section C; and Hank Bornkamp and Roger Gould, Section D. Roland Snead took the low gross award for the season with a 34, and Hank Dymowski's net 26 won him low net honors.

The Championship flight winners in the seeded playoffs were Bob Kern and Walt Maciolek. Flight winners included Jim Kopliner and Jerry Witsil, second flight; Bud Bosley and Al Terry, third flight; Homer Hill and Harold Johnson, fourth flight; and Marty Perron and Dick Kopliner, fifth flight.

The 94 members and guests of the league required three hours of tee-off time to begin this final event of their season. During its business meeting, the league decided to move 1982 regular season play to Princeton Meadows Country Club.

New officers were also introduced at the league meeting. Dick Shamon was elected league president, with Bill Ernst as secretary and Bud Bosley as treasurer.

Those who wish to be notified at the beginning of play next season should call Dick Shamon at ext. 3030.

ppl people

PPL PEOPLE: SAILING

Many old film epics end with the hero sailing off into the sunset, and it may have been that image that captured the imaginations of four laboratory employees. For while one races sailboats and two own their own craft, all four go down to the sea in a variety of boats for an afternoon's relaxation.

Don McBride

Don became interested in boating when he was 14 years old. He owned four power boats before abandoning boating completely. His interest was reactivated in 1972, when his wife introduced him to sailing. Since then, Don maintains that "I've never been back in a power boat unless I have to be."

Don feels a sailboat sailor has to be "a sort of masochist. He has to tolerate being sick, cold, wet, tired, and spending a lot of money while going nowhere slowly!" But he admits to "a peacefulness" on the water, the "challenge of using silent power. It's a nice way to travel."

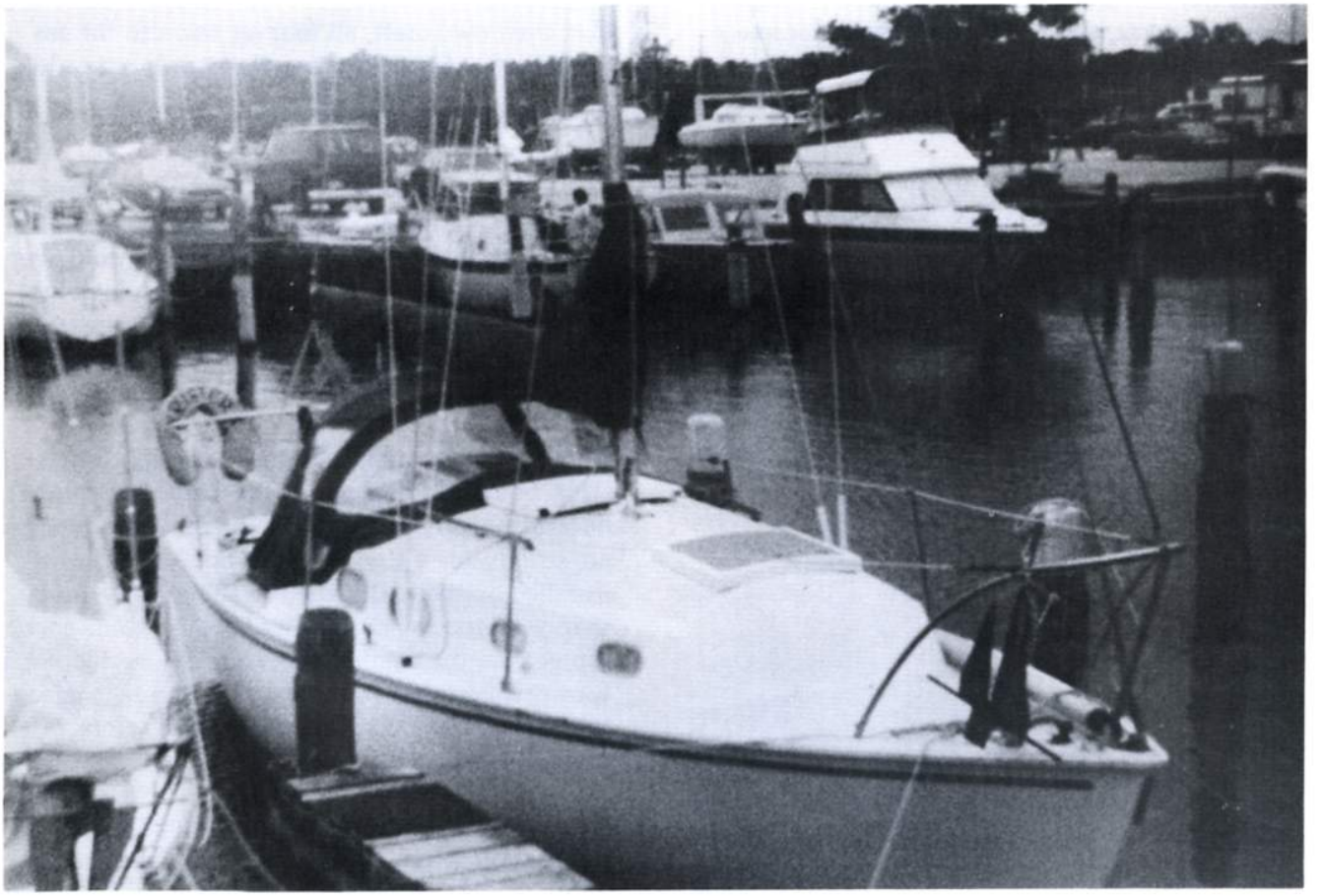
Don now races JET 14's (a one-design, dingy-sized boat). As a racer, he believes that "you have to be constantly on the alert. These boats are strictly for racing, with a lot of 'go-fast stuff' installed on them. But they're all basically equal; that gives you the challenge of the skipper's edge, rather than the boat's edge. You're always looking for the right tactic to use; you have to take advantage of everything you're given. You're not out there to watch the scenery!"

Don races with the Hunterdon Sailing Club, operating out of Spruce Run. "The group is very competitive," he laughs. "Some of them seem to think they're getting ready for the Olympics!" He's raced in regattas held in rain, with no wind, and in other non-optimum sailing conditions. "You can't pick and choose the day you want to compete," he explains philosophically. "You just take what you get and compete in it."

Competing isn't as easy as it looks. "You either have to learn at school," Don contends, "or in the school of hard knocks like I have —— and I'm still learning! But when you're racing, you're thinking about nothing else but racing. If you're mind's elsewhere, you're dead. You have to be totally involved in what you're doing."

Don also charters larger boats for cruising. One of his cruises recently involved members of the PPL energy systems branch, who boarded a 32-foot and a 34-foot boat Don had chartered for an outing on Chesapeake Bay. The boats, which were accompanied by yachts from the Hunterdon Sailing Club, made stops at Annapolis and St. Michaels, Maryland. Baltimore's inner harbor was the most interesting "port of call".

The racing instinct is now so strong, though, that Don finds "even when I'm cruising, I'm trying to make the boat go faster!"



Al von Halle

As a youngster, Al worked in a boatyard and was "always around boats. I figured I'd eventually own my own boat, because it seemed the thing to do then."

Instead of buying a power boat, however, Al opted for a sailboat. "I guess I was looking for something more like pure boating," he recalled, "working to convert nature to motion." That allure attracted him, even though he admits no interest in water sports, the beach, sun or the outdoors!

Al spent his first year as a boatowner learning to sail on Long Island Sound, then worked as a crew member of a thistle (a small, one-design racing sailboat) on Lake Ontario the following year. He eventually crewed on a 32-foot ship and

skippered a thistle, spending three years racing sailboats.

"As I got more involved with sailing," he explained, "I started doing some long distance sailing." One of his trips in his 19-foot boat took him around the perimeter of Lake Ontario for about 12 days. "I went across the lake to Kingston, then around the lake to Buffalo and back, all on my own. It was about 200 miles of sailing, and I really enjoyed the cruise!" Al has since bought a 26-foot fiberglass sailboat, which he feels is "a step up, so I can do some long-term cruising."

Admitting that taking care of a boat does involve a large time -- and money -- commitment, Al observed that "sailing is relaxing therapy. You're focusing a lot of your energy onto one area and seeing an improvement. I enjoy a lot of the maintenance work I do on the boat; it's something you can take pride in."

Al's desire for improvement also extends to his sailing skills, acquired through a combination of Power Squadron classes and experience. "You're always trimming for optimum -- attempting to get the boat to go a bit faster, or as fast as it possibly can. You try to make the most efficient use of the wind; that's the nature of sailing, the extra added attraction over motorboats -- being constantly conscious of the wind. When you talk to a motorboat skipper, their point of reference is always land or a point on a compass. With a sailboat skipper, it's always the wind."

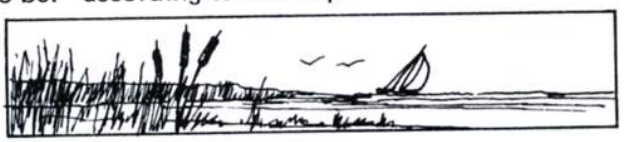
Buzz Jobes

Buzz was attracted to sailing over motorboats because motored craft "are no different than driving a car. Sailing uses a different set of skills, and brings you closer to nature. It's not a fast sport, but it is fun to do. There's a romance to the sea, and often it's very peaceful out there."

That peace can be shattered by a sudden wind or storm, however. Buzz explained that "you'll usually have a storm to cope with if you're out for a week. And you have to know what you're doing, since you can usually run on land faster than you can sail!"

Sailing, in Buzz's estimation, "requires skill. You are always facing up to a new challenge; I've never been out when it hasn't been challenging. You have to be absolutely alert to unseen problems, and there's always the danger of running aground."

He ruefully recalled chartering a 30-foot boat for a week in the Chesapeake Bay waters. Those waters were shallow, and required sailing up a channel -- with shoals "not always where they were supposed to be!" according to the map.



Buzz has been sailing for over 30 years, and at one time owned a 50 year old, 30-foot wooden sailboat. Despite the work involved in sailing, he finds he'll make time to indulge himself. "You can be completely occupied with something going on at work," he continued, "but sailing takes your mind off the job right away. A lot of work goes into maintaining the boat, and the bigger the boat the more work is involved. But sailing is still a real pleasure!"

Ken Le Bon

Ken has always been interested in boats, but his real involvement with the sea began 10 years ago. He started renting a Barnegat 17 at Toms River, and found he enjoyed his time on the ocean sufficiently to purchase his own craft.

His choice (a 24-foot raised deck wooden sloop) proved his commitment to sailing. "There's a little more time and money involved in fixing up a wooden boat," he explained, "but for me, there's something better, richer, something warmer about a wooden ship. And they have a lot of history behind them; there are 75-year-old wooden boats still sailing today."

Ken suggests, however, that neophytes on the bounding main take a Coast Guard or Power Squadron course in safe boating first. "It's important to learn the 'rules of the road' first, both for yourself and for other boaters," he emphasizes. "Then practice; that's what it takes. There are a lot of people out there on the water with you, and you have to know what you're doing all the time."

For example: on the ocean, according to Ken, the climate can change drastically in five to ten minutes. "You can go from light breezes to winds of 25 to 30 knots in a matter of moments," he said, "and the winds in a thunderstorm can be truly violent. You can be knocked over in seconds. You have to gain experience slowly and build up to sailing on the ocean."

Although he's since sold his boat, the LeBon family still has a Sunfish sailboat and a canoe. But the bug hasn't let Ken go: "I'd really like to get back into sailing with my own boat. There's something about working on your own boat that's attractive, at least to me. It takes a lot of cleaning and maintenance, but once you get out on the water in it, that special feeling is always there. I guess it's the romance of the early days of sailing that gets some people out onto the water, but it's a long-term, full-time commitment to stay with it."

HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

Vol. 3, No. 2 November 3, 1981

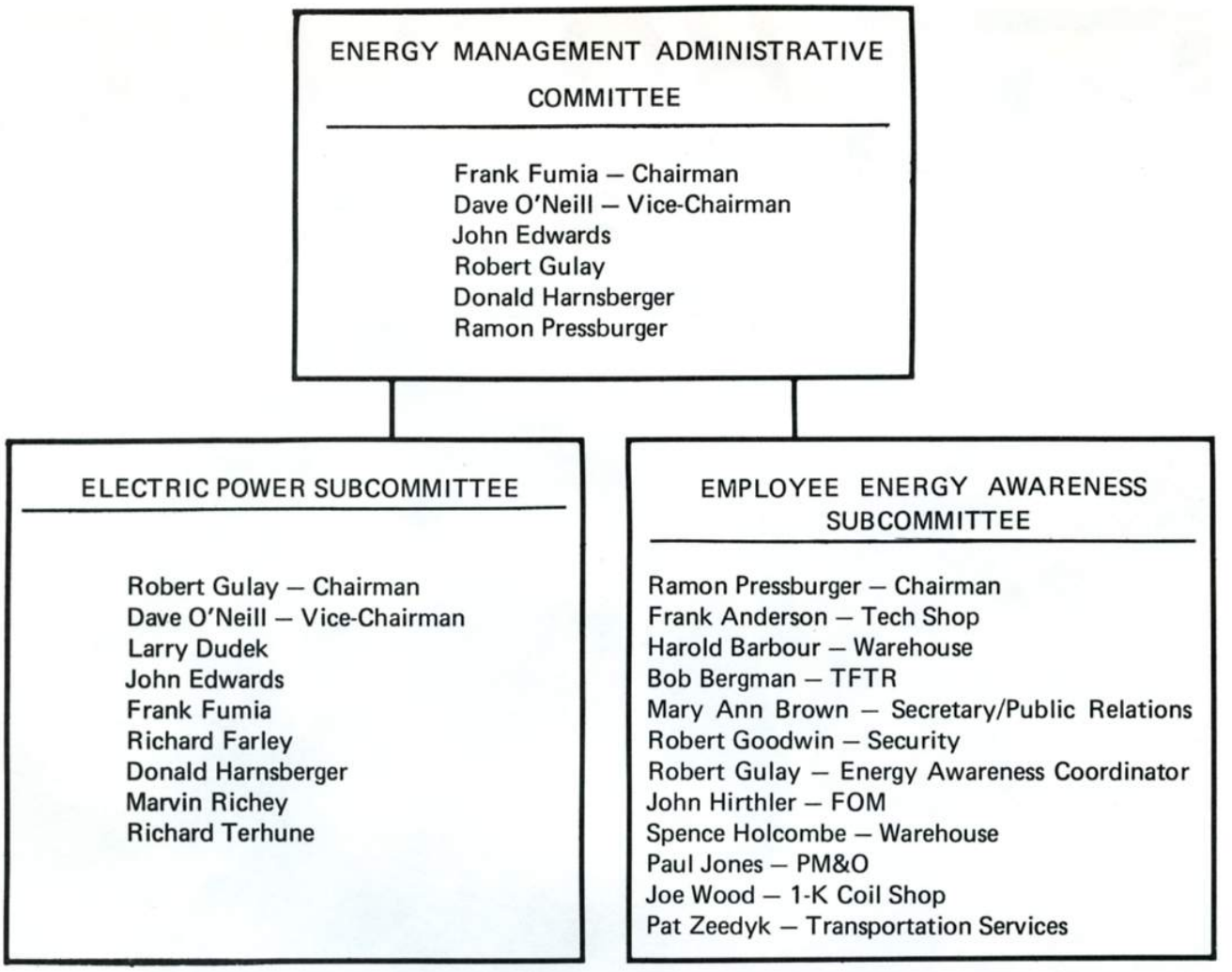
ENERGY WEEK

Members of the PPL Energy Management Administrative Committee posed with laboratory Director Dr. Harold Furth to help kick off Energy Week. Pictured are (back, left to right) Donald Harnsberger, Ramon Pressburger, committee vice-chairman Dave O'Neill, (front, left to right) committee chairman Frank Fumia, Dr. Furth, and Robert Gulay.

November 9 has been designated as the start of PPL Energy Week, a time when all of us can become more familiar with the energy conservation requirements and activities of the laboratory.

The effect of the rapidly increasing cost of all forms of energy on our expanding operations requires commitment of all staff members to energy conservation. Last year PPL saved one and one-half million dollars in fuel and electricity costs, compared with the costs before energy conservation measures were instituted. We hope to improve upon this accomplishment this year, since the severe budget constraints that we face in FY 1982 make energy costs a critical factor in all of our decisions. Every dollar that we save through energy conservation is another dollar that we can apply productively toward our program objectives.

I want to express my wholehearted support for energy conservation resources throughout the laboratory, and I urge all of you to give this effort your personal support. An outline of the proposed energy conservation program is presented in this issue of HOTLINE.



EMA Goals

The Energy Management Administrative committee supervises and administers related energy conservation projects. The committee serves to aid its two subcomittees in furthering their projects.

The Employee Energy Awareness subcomittee is responsible for developing, organizing, implementing and monitoring the in-house energy awareness plan for PPL. The Electric Power subcommittee has been charged with developing, organizing and implementing energy conservation methods to reduce the laboratory's energy bills.

Project engineer Nicholas Stecky is responsible for the implementation of major energy retrofit projects which receive special funding from DOE. Three projects currently being pursued include extension of the new central chilled water system into the original C-Site buildings, where old chillers will be dismantled or placed on standby service; installation of a "free winter cooling" system into the central chiller plant; and installation of a computerized energy monitoring and control system.

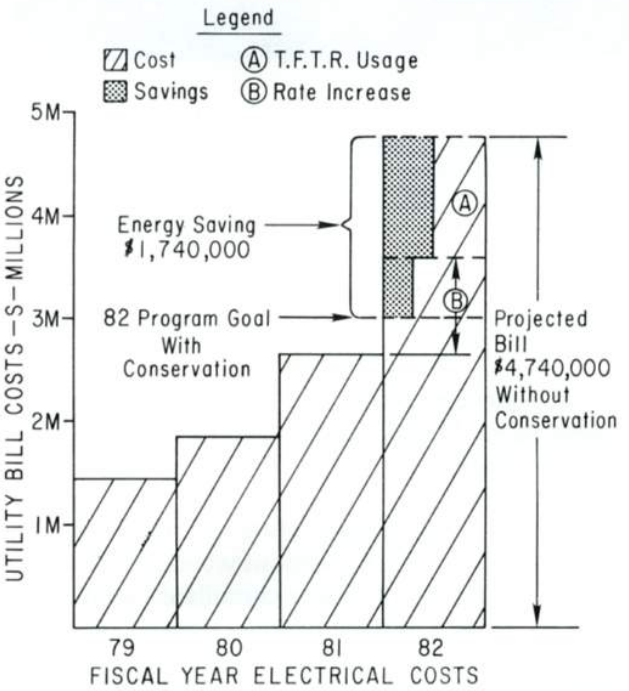
We urge employees who are dedicated to seeking out and eliminating energy waste to join either the Electric Power or the Employee Energy Awareness subcommittees.

EMA Committee

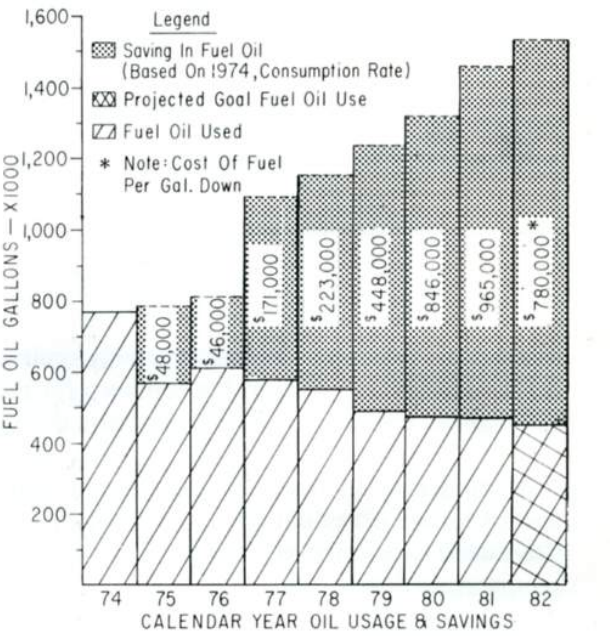
The Energy Management Administrative committee, working with the Electric Power and Employee Energy Awareness subcommittees, has devised a number of methods to reduce energy use throughout the laboratory. These measures, which will be put into effect in the near future, include:

- Delamping of electrical fixtures by removing 25 percent of the existing lighting in the laboratory.
- Enforcement of temperature rules and regulations, as mandated by University policy.
- Electrical demand control program.
- Shutting off and reporting on unnecessary lighting use by security forces during their tours of the facility.
- Building/area monitors, to seek out and eliminate all forms of energy waste.
- Display of energy awareness posters, as part of the employee energy awareness program.
- Talks on energy conservation delivered by department heads.
- Energy library services, provided by Joe Wood, Bldg. 1-K, ext. 3061.
- Janitorial cleaning done during daylight hours.
- Dedicated program of turning off unnecessary equipment throughout the facility.

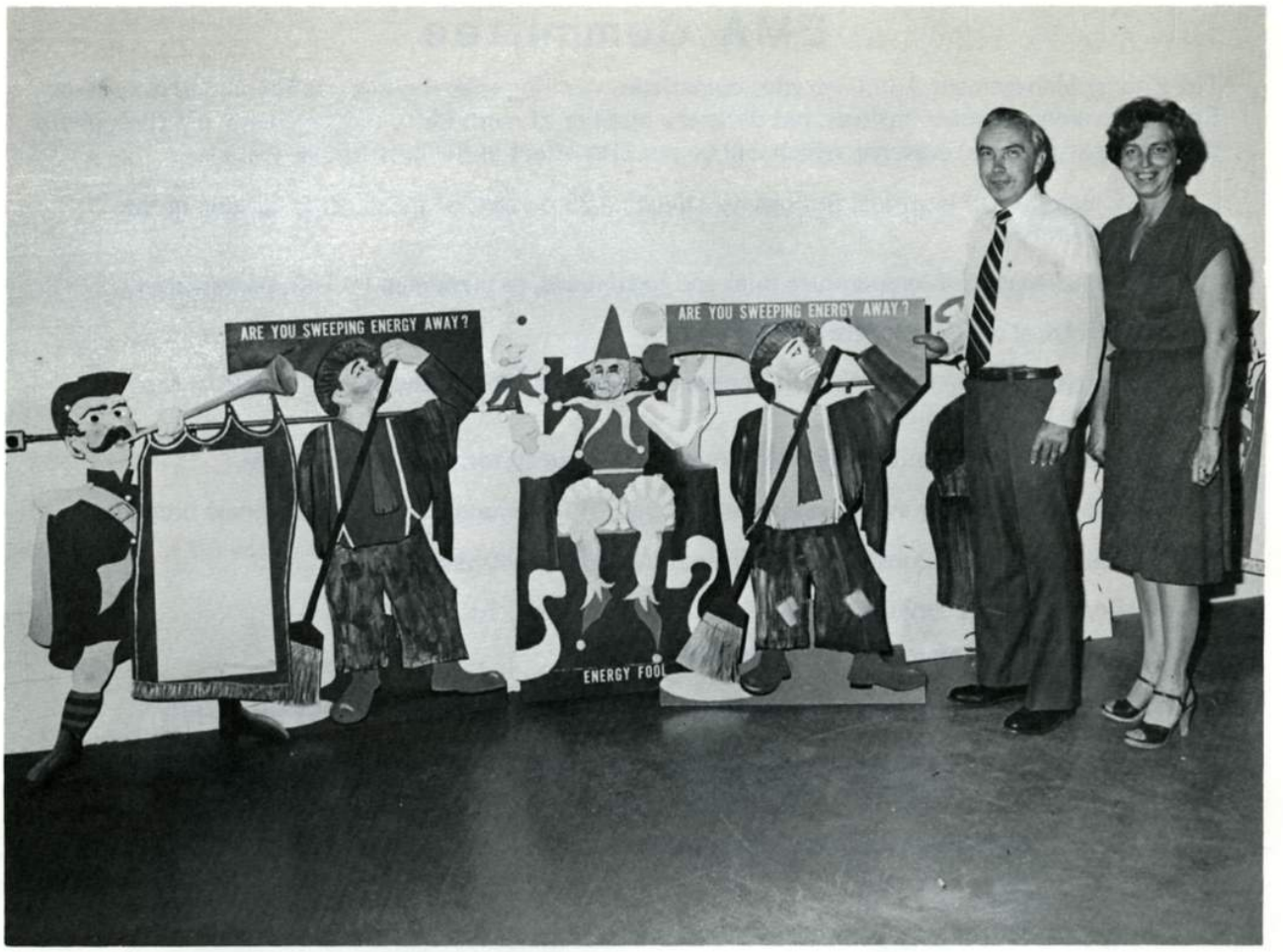
These measures are being implemented to achieve PPL's goal of energy reduction. Energy usage will be reported to the PPL Council on a monthly basis, and comparisons will be made to determine the rate of reduction.



The Electrical Costs Graph indicates a projected 1982 electrical cost of $4.7 million. The energy cost saving goal of the energy program is $1.7 million.



The Oil Usage and Savings Graph depicts a $965,000 savings in fuel oil for 1981, despite PPL operations growth from 382,000 sq. ft. in 1974 to 726,000 sq. ft. in 1981. Employee conservation measures made this savings possible.



Management observer Conrad Stout and Mary Ann Brown, Public Relations coordinator of the Employee Energy Awareness subcommittee, examine a series of energy awareness posters. The posters, designed by Mary Ann McBride, will be placed in key locations throughout the laboratory to remind employees of PPL's efforts to conserve energy.

Heating Policy

In an effort to combat increasing energy costs and deal with budgetary restrictions, PPL is continuing the winter heating policy it has followed for the past several years. The policy has resulted in significant savings through conservation efforts throughout the laboratory.

The policy restricts thermostat settings to maintain temperatures of 65 degrees Fahrenheit. Heat will also be turned off or cut back on weekends on a weather permitting basis. Exceptions will be made for designated experimental areas, but unannounced inspections will be held to insure compliance with temperature restrictions.

Space heaters, which can only be purchased with the approval of Plant Engineering, or individual room controls should be set to maintain the 65 degree level. Unneeded lights should be turned off.

If you have an office or space you feel needs supplemental heat, call Plant Engineering. If you know of any energy wasting situations, call Plant Maintenance at ext. 3092.

Conservation

Demand charges, based on maximum power consumption at one time, are a major part of PPL's electric bill. It may surprise some employees to learn how much money could be saved by simple conservation measures. Approximately $10 could be saved if a 1000 watt electric office heater was turned off on a peak demand day. A window left open for four hours wastes $20.85 in the summer, and a whopping $69.90 in the winter. An exterior door left open for three minutes wastes $4.05 in the summer and $13.36 in winter.

At peak demand periods, lights left on in an unoccupied office waste $9.38 per hour on summer rates and $6.92 in the winter. A typical office with four lighting fixtures uses $256 per year on lighting alone.

Benefit Help

Employees with questions about Blue Cross, Blue Shield, Major Medical and the filing of claims can get help from Eleanor Schmitt. Effective November 3, Eleanor is available for consultation each Tuesday from 9 a.m. to noon in conference room 345, LOB–W.

FTS Extended

All FTS calls to Alaska (area code 907), Hawaii (area code 808), Pureto Rico (area code 809) and the Virgin Islands (area code 809) can now be dialed direct. Simply dial FTS access code 8, the area code, and the seven digit telephone number.

The General Services Administration is now billing FTS calls on call duration, rather than on number of calls per site. This change was necessitated by recent increases that GSA must pass on to the user.

This doesn't mean FTS use should be curtailed; it is still less costly to use FTS for all commercial business calls. It merely means conversations should be planned so calls can be rapidly expedited.

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 Information Services, Module 2, C-Site, James Forrestal Campus, ext. 2754.

Patent Program

PPL now has a Patent Awareness program, as well as a Committee on Inventions, to increase the patent awareness of laboratory staff. Four invention disclosures were filed with the committee during October:

- Bag Molding System, by J.C. McDade and L.E. Dudek
- A minimum-Average-B Stellarator, by T.H. Stix
- A modular Snake Stellarator, by H. Furth, G. Sheffield and S. Yoshikawa
- Deuterium Filter for a Helium Mass Spectrometer Leak Detector, by H. Furth, H.F. Dylla, W. Blanchard and R. Krawchuk

For further information about the committee or the program, contact committee secretary Nancy Jones at ext. 2659.

Patent Granted

A patent covering a scheme for generating plasma current waves, recently granted to PPL's Nathaniel J. Fisch, has been mentioned in the New York Times.

Fisch, who has been with the laboratory for three years, is on the research staff in the Theory Division. He received the patent for work done while he was a graduate student at the Massachusetts Institute of Technology (M.I.T.) in 1977.

The patented concept invloves a method of providing for a steady-state tokamak fusion reactor by injecting radio frequency (RF) waves into a tokamak plasma to maintain the plasma current. This corrects a major defect in the tokamak approach to controlled fusion, since tokamaks are presently pulsed devices. The commercial appeal of a steady-state device would be far greater.

"If this idea works," Fisch said, "it would allow the tokamak reactor to run steady-state rather than in the pulsed mode. It's not something that people hadn't thought of doing before, but they thought it would necessarily consume much too much power."

Fisch's idea involves injection RF waves that interact only with a certain group of energetic electrons, thereby demanding much less power than was originally believed to be possible. Fisch likens his concept to "inventing power steering before inventing the automobile." He feels the concept is "possibly an important design feature in a fusion economy, but we have much, much more important problems to solve before we develop a fusion economy."

The patent application Fisch filed required design specifications to outline the idea. "It's no longer necessary to build a model of a concept to get a patent," he explained. "But I did include some designs to show where it could phase into a reactor." He emphasized that the scheme is not yet proved, but experiments to test it are now being conducted at PPL (on the PLT and ACT-1 machines), in major programs at M.I.T. and in Japan, and in smaller projects at other institutions.

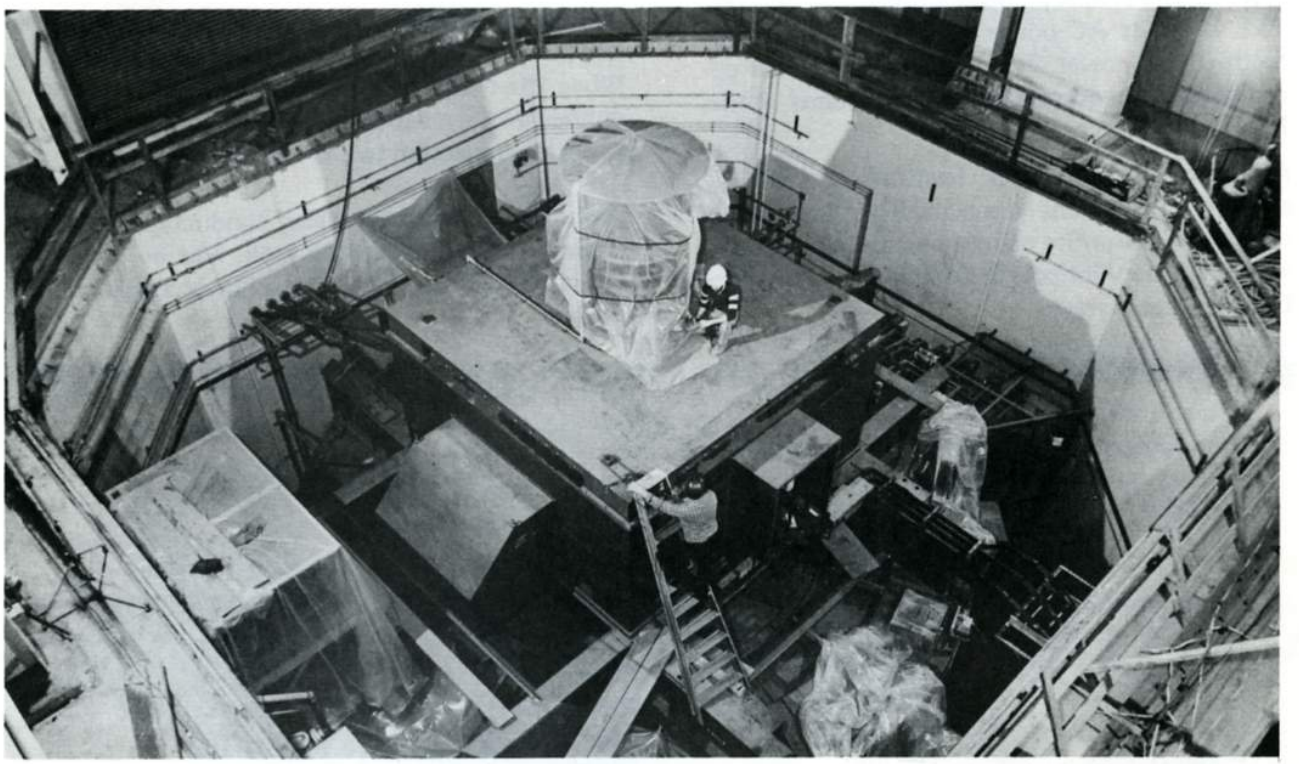
Fisch has two other patent applications for generating current, employing waves at different frequency ranges. The rights to his current patent are held by the Department of Energy.

No, this isn't the new PPL dentist; this is a piece of government surplus material that the Laser Group intends to cannibalize. The inner works will be used in many different pieces of equipment that the laboratory is called upon to fabricate.

HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

Vol. 3, No. 3 November 16, 1981



TFTR MG TEST SUCCESSFUL

The first motor generator set for TFTR was successfully spun for the first time October 23. The rotor was brought up to 15 revolutions per minute (rpm) and slowed with a manual braking system.

Dr. Ernst de Haas, lead engineer for the MG sets on the TFTR project, explained that the 600-ton rotor was only run to 15 rpm because work on the cycloconvertor has yet to be completed. The cycloconvertor is the system component that, when coupled with a liquid rheostat, slows the rotor from an idling speed of 257 rpm to 25 rpm. Work on the cycloconvertor is expected to continue through this month.

The two MG sets for TFTR are nine times as big as the existing motor generator sets at PPL. Each has a 600-ton rotor and a 300-ton stator, and is rated at a maximum speed of 375 rpm. Each generator can deliver 475-MVA pulses for six seconds at five minute intervals.

The pieces for each set were supplied to PPL by General Electric, and were assembled by the Belding Corporation. The sets were built vertically, since horizontal construction would have placed too great a strain on the bearings and shafts.

Pieces of the stator for the second MG set, damaged in last December's accident, were removed from the pit in September. Engineers from General Electric have examined the rotor and remaining systems for the set, and are currently assessing damage to the unit.

NB Power Tests Underway

The neutral beam power supply system for TFTR successfully began the initial phase of its testing program recently.

The test involved the integration of the local control system with the primary power subsystem, as well as the energizing of the primary power subsystem. The primary power subsystem converts 13.8 kilovolts AC power to 150 kV, 12-phase rectified DC power. The local control center coordinates and controls all the subsystems of the NBPS.

According to Russ Winje, head of the NBPS effort, "It was a very important first step" toward integrating the entire neutral beam power system with the 120 kV ion source developed by Lawrence Berkeley Laboratory.

The subsystem produced 100 kV at 70 amps for pulse lengths up to five seconds on September 30. It will ultimately produce 150 kV at 70 amps, powered by 13.8 kV feeders from a transformer in the main power substation. The testing process is taking place in the Experimental Power building.

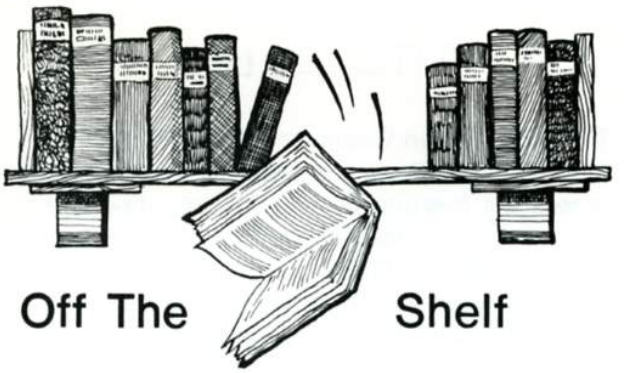
Testing is expected to begin on the remainder of the power system within the next two months. When the entire system is functioning, it will be connected to resistive dummy loads for testing prior to connection to the ion source.

The testing program is being conducted by Jim Gregory of the TFTR Division, and by Dale Ashcroft and members of the Power Engineering Branch.

Van Pooling

PPL and twenty Forrestal Center companies are attempting to establish a joint van pooling program. As a result of a meeting held at the laboratory recently, the following list of van pool contact people has been prepared. Interested parties should call the contact person in their area, giving their name, company, work hours, flex time, and company telephone number.

NAME	COMPANY	HOME AREA	WORK PHONE
Alison Samph	Arete	Philadelphia, PA	452-8090
Cheryl Woodall	Arete	Cranbury, NJ	452-8090
Don Greene	DOE	Newark, NJ	683-3717
Grace White	DOE	Rocky Hill, NJ	683-3711
Chris Ferrara	Interpool	New Brunswick, NJ	452-8900
Cindy Gallagher	Mobil	Hillsborough, NJ	452-9440
Al Giancarli	Mobil	Trenton, NJ	452-9440
Calvin Jones	Mobil	Trenton, NJ	452-9440 (ext. 48)
Deena Miller	Mobil	Highland Park, NJ	452-9440 (ext. 67)
Patty Ortleb	Mobil	Englishtown, NJ	452-9440
Betsy Podsiadlo	Princeton Forrestal Center Administration	Montgomery Twsp., NJ	452-7720
George Kolinchall	PPL	Levittown, PA	683-2419
Carl Liberti	PPL	Levittown, PA	683-2697
Brian McCormack	PPL	Morris County, NJ	683-2024
Laura Steer	PPL	Mt. Holly, NJ	683-2102
Lois Gilbert	Remington Rand	Trenton, NJ	799-8950
Rhonda Rossi	Remington Rand	Trenton, NJ	799-8950
Kim Lavan	Robert Wood Johnson Foundation	Trenton, NJ	452-8701
Susan Rasmussen	Robert Wood Johnson Foundation	New Egypt, NJ	452-8701
Marilyn Williams	Robert Wood Johnson Foundation	Newton, PA	452-8701
John Shiber	Xerox	E. Brunswick, NJ	452-1800



Off The Shelf

Most laboratory staff members are aware that the library has the most recent edition of Thomas' Register of Manufacturers, located in the reference section. There are other guides that expand on Thomas', and users of Thomas' should be aware of this small collection, located near the Circulation Desk.

MATERIALS ENGINEERING———————

This well-known directory of products covers materials such as iron, steels, plastics, rubbers and elastomers, finishes and coatings, composite materials, and so on. Many specifications are included along with manufacturers advertising. The second section includes a guide to local sources. The Comparison of Materials division is very extensive, providing considerable information on the properties of materials. Published annually by Pentron/IPC, Cleveland, Ohio.

NUCLEAR NEWS———————————

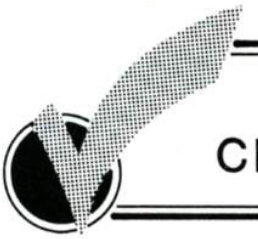
A buyers' guide to nuclear products, materials and services. The directory is divided into two sections: companies located in the United States, and foreign companies. A directory of suppliers is also included. Published by American Nuclear Society, LaGrange Park, Illinois.

OPTICAL PURCHASING DIRECTORY———

The Optical Industry and Systems Directory is a buyers' guide and product table listing over 1200 products. An alphabetical listing by product name with many cross references make this a useful source of product information. Suppliers are listed as well as manufacturers and a geographical guide. Published by Optical Spectra, Pittsfield, Mass.

ROBOTICS INDUSTRY DIRECTORY————

First complete and comprehensive listing of robot manufacturers and related component manufacturers. Lists institutions, laboratories and universities performing related research, and consulting firms with robotic expertise. Should be useful to engineering personnel, management, and procurement. Published annually by Robotics Publishing Corp., Tujunga, California.



Security Checkpoints

In case of an emergency do you know who to call and the phone number?

When an emergency occurs, you should have at your finger tips the number needed for the specific type of emergency. When you are at work on the Forrestal campus, the telephones have a sticker affixed to them with the numbers to call in the event of an emergency. The emergency line used at Forrestal is 3333; the number used for Main Campus is 3131. You should also have a list of numbers for emergency notifications in your home, including your local police department, fire and first aid squads, family doctor and the local hospital.

When making an emergency phone call, there are steps which you as the caller should follow to allow the agency being contacted to perform its task efficently.

When placing an emergency call, remain calm and give your name; the type of emergency (illness, injury, fire, etc.); and the exact location of the emergency as specifically as possible. After giving the information, *do not hang up* until the individual handling your call has all the information he needs. Other information may be requested, such as your address, the victim's name if known, and so on.

By following these simple steps, your emergency can be handled quickly and efficently.

Wanted

The ERC is in need of a recording secretary. Duties would include attending all ERC meetings, taking minutes and distributing them to ERC members.

Interested parties should contact Leigh Ann Fares at ext. 3748.

The annual PPL Christmas Dinner-Dance will be held at Cedar Gardens in Hamilton Square December 11. Tickets for the event will be on sale from November 30 to December 9 at the C-Site reception desk. Ticket prices will be announced in a future edition of HOTLINE.

Benefit Questions

Any employees who have questions about establishing a Supplementary Retirement Annuity (SRA) contract should call Loretta Dougherty at Clio Hall, Main Campus, ext.7-2-3301.

Medical Benefits

Your Blue Cross/Blue Shield ID card identifies which group you participate in. If you are enrolled in the Blue Cross/Blue Shield 500 series, unmarried children are eligible for plan coverage through the end of the calendar year in which they become 19 years old. If you are enrolled in the Blue Cross/Blue Shield 750 series, unmarried children continue to be covered through the end of the benefit month in which they marry or the end of the calendar year in which they become 23 years old.

Enrollment may be continued beyond age 19 or 23 for an unmarried child who is incapable of self-support due to mental retardation or a physical handicap that began before age 19.

Major Medical coverage continues for unmarried children until age 19; if the unmarried child is a full time student and dependent on the employee for support, Major Medical coverage continues through age 22.

ERC Notes

The ERC met on Wednesday, October 28. The rules and procedures for meetings were finalized, as was the meeting format. The standing and ad hoc sub-committees (Communications, Benefits, Day Care, Safety, Charter, and Training) reported their proposed goals for the year to chairman Larry Michaels. Following committee reports, safety shoes were discussed under old business. Dr. Furth and Mr. Rossi will attend the next ERC meeting to consult with the committee on a laboratory administrative matter.

Training

Anyone responsible for training programs (whether ongoing or past) should contact Len Thomas at ext. 2052. Len is currently attempting to identify present training activities and coordinate the establishment of future programs. If you have specific training needs or questions pertaining to a training program, please notify Len at Personnel, Training, Room 210, Sayre Hall, B-Site.

Thanks to his co-workers in Plant Maintenance and Operations, retiree John Kessler will never forget his days as supervisor of rigging at PPL. Prior to leaving the laboratory October 30, John received a replica of the Grove crane he worked with for six years. The "crew" of the crane are painted to resemble Joe Kondash, George Dowers, Larry Jones and John himself. John also received a watch and a tankard at his Oct. 29 retirement party.

HOTLINE
PRINCETON PLASMA PHYSICS LABORATORY
Vol. 3, No. 4 December 3, 1981

ISS For TFTR Arrives

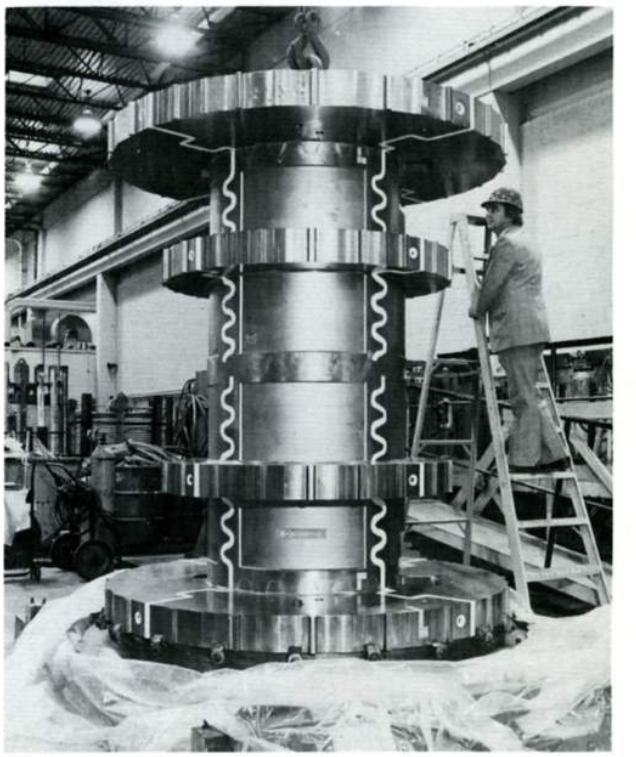
The largest diffusion bonded assembly ever built—the inner support structure for TFTR—was delivered to the Brown Boveri Corporation's New Brunswick facility October 29. The unit was fabricated at Rockwell International's North American Aircraft Operations (NAAO), culminating a three year effort by that company.

When TFTR is operating, the magnetic fields generated by the TF coils will produce both a centering and overturning force on the coils. The inner support structure is designed to resist these forces.

The ISS will take up to 75 percent of the centering force and 10 percent of the overturning force exerted by the TF coils during machine operation. In addition, it will support three stacks of PF coils. The remaining PF coils will be supported by an umbrella structure above the TFTR or by the machine substructure itself.

Rockwell International constructed the ISS at its Los Angeles facility. The unit is made of titanium alloy 6Al-4V, selected for its mechanical properties. It consists of four subassemblies; each subassembly is separated into quadrants by a fiberglass dielectric to reduce eddy currents.

The ISS represents the first time that Rockwell's diffusion bonding technology has been applied to a non-aerospace product. Titanium plates, cut and shaped to the approximate envelope of the desired finished product, were stacked in intimate contact and surrounded by stainless steel mold blocks within a vacuum retort. The "stack" was heated to about 1,700° F, while the pressure was increased in steps to a maximum of 3,000 psi. The temperatures and pressure conditions cause molecular diffusion across the interface between plates, forming one homogeneous piece of titanium with the properties of a single piece.

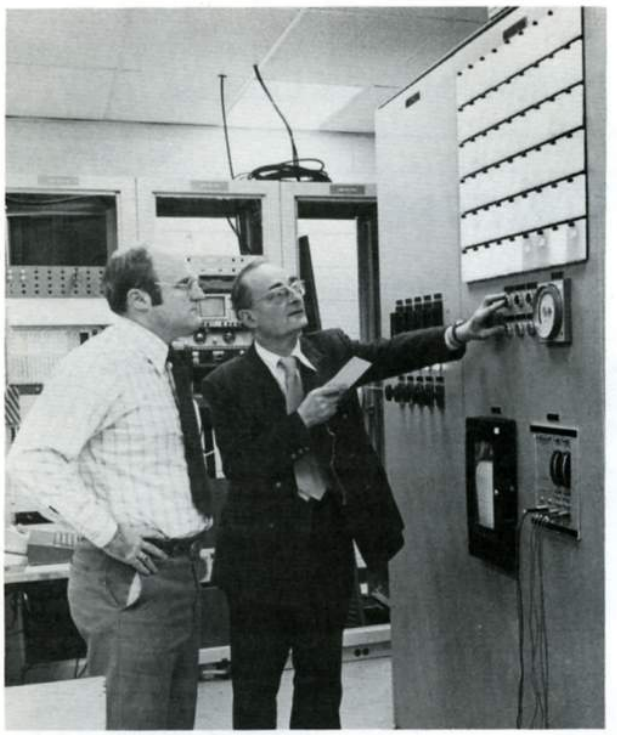


The ISS weighs 28,000 pounds, measures 8½ feet tall with a maximum diameter of 7¼ feet, and has 6½ inch thick rings. The ring and cylinder sections are the most difficult parts ever diffusion bonded.

After assembly, Rockwell machined "keys" on the four ISS rings, which will mate with the nose of each TF coil case. Despite the massive size of the unit, machining tolerances of less than ±.005 inch were maintained in many areas.

The ISS will be separated into four subassemblies at Brown Boveri's facility, then reassembled as six PF coils are precisely positioned around the cylinder. The ISS/PF coil assembly will then be shipped to PPL for installation in the TFTR machine by early next year.

MG Tests Continue



Dr. Ernst de Haas, lead engineer for the TFTR MG sets, points out results of the recent MG test to David O'Neill, AC Power Section head of the Energy Branch, FOM.

The first motor generator set for TFTR passed another important test November 19. During the test, the 600-ton rotor was brought up to 100 revolutions per minute (rpm), then allowed to coast down to 20 rpm over a two hour period. At that point, it was mechanically braked to a halt.

Dr. Ernst de Haas, lead engineer for the MG sets on the TFTR project, explained that the main purpose of the test was to check the balance of the flywheel. It was found to be .014 inch out of balance, well within the .018 inch tolerance at which the bearings were set. "Everything went beautifully" during the test, Dr. de Haas added.

Following the test, holes were drilled in the spider assembly atop the MG unit, allowing for placement of weights to further balance the massive flywheel. Weights are inserted into the structure "just as they are when you balance a wheel on your car," Dr. de Haas explained. The MG set will continue being spun and balanced at increasing speeds throughout the month.

Engineers from General Electric arrived at PPL Nov. 30 to begin electrical testing of the unit. Electrical testing is expected to continue through February.

Dr. de Haas pointed out that the Nov. 19 test began at 6 a.m. and was completed by 8 a.m., avoiding peak demand time utility charges which could have added approximately $9,000 to PPL's November electric bill. The prudent scheduling of the test prevented the increased charges.

The two MG sets for TFTR are nine times as big as the older motor generator sets at PPL. Each has a 600-ton rotor and a 300-ton stator, and is rated at a maximum speed of 375 rpm. Each generator can deliver 475-MVA pulses for six seconds at five minute intervals.

The pieces for each set were supplied to PPL by General Electric, and were assembled by the Belding Corporation.

Detector Recall

Some of the 185,000 photoelectric smoke detectors manufactured by the Chloride Pyrotechnic Division of Chloride, Inc. are being recalled due to possible defects.

Some of the battery operated detectors the Hingham, Mass. firm made between March 1, 1979 and March 15, 1981 may contain a potentially defective microchip. The fault would prevent the alarm from sounding in the presence of smoke.

The commercial and residential detectors were sold under the brand names of Chloride Pyrotector, Archer, Masterguard, Vanguard, Vantage I and Protect-er Systems. Detector owners can test their detector by inserting a fresh, factory specified 9-volt battery and pressing the test button. If the horn sounds, the detector does not contain the faulty microchip.

If the horn does not sound when tested, owners should call Roberta Calla of Chloride Pyrotector at 1-800-343-5647 for instructions on where to send the product for repair or free replacement.

Holiday Closing

In a November 17 memo to all PPL employees, laboratory Director Dr. Harold Furth announced the closing of the laboratory between December 24 and January 4.

The closing is expected to contribute to improving the laboratory's financial situation by producing savings in two principal areas:

> Energy Conservation: The cost savings for heat and significant contribution to our Energy Conservation program.
>
> Productivity: In past years, about 50 percent of the staff chose to take vacation during the period between Christmas and New Year's, so that those who came to work were hampered in their ability to accomplish many of their assigned tasks.

All staff members will be charged three vacation days for December 28, 29 and 30. Staff members who have not accrued sufficient vacation days or who have made other plans for the use of their accrued vacation will be permitted to draw against credited vacation time for the next vacation cycle. Those who foresee some problem are urged to talk to their supervisors or to contact the Personnel Office as soon as possible.

The Exempt Staff will receive their December paychecks on Monday, December 21. The Biweekly Staffs will receive their regular paycheck on Friday, December 18. On Wednesday, December 23, the Biweekly Staffs will receive a salary advance (standard hours less estimated deductions) on their payroll checks of December 30. On January 4, 1982, the Biweekly Staffs will receive their regular (December 30) paycheck adjusted for overtime and for the salary advance.

Service Awards

A service awards presentation will be held December 17 at 9 a.m. in the Gottlieb auditorium. Employees with five, 10, 15 and 20 years of service to PPL will receive awards from their department heads.

The Personnel Office will contact eligible employees with invitations to the ceremony.

T.O.U.R.S.

(Thanks to Our Underlying Reason for Success)

One of the laboratory's greatest resources for public relations is our tour and speaker program. By opening our doors to the public, we are able to explain our fusion research program to thousands of people yearly.

In 1974 (the first year that formal records were kept) about 50 groups were shown through the laboratory. Each year the number of groups visiting the lab has risen. During 1981, 165 groups were escorted through the lab, totalling nearly 3,000 people—almost double the number from the previous year!

By traveling to professional organizations, colleges and high schools, our speakers have "spread the word" about fusion to another 2,000 people this year.

HOTLINE salutes the dedicated individuals who make this possible. Without the cooperation of the guides and speakers, who volunteer their time and their expertise, the benefits and successes of this program could not be reaped. It is their attitude of sharing (both of ideas and of themselves) that has helped make PPL one of the "hot spots" for tourism in New Jersey.

ERC Notes

The ERC met on Wednesday, November 11. Following sub-committee reports, Dr. Furth and Mr. Rossi spoke to the committee regarding the general budget "picture" for the laboratory. They also discussed the possibility of a total laboratory shutdown over the Christmas holiday. Dr. Furth explained to the committee that the lab needs to economize wherever possible, and the shutdown will be a relatively painless way to save money.

Under old business, the employees' credit union and some of its policies were discussed.

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 Information Services, Module 2, C-Site, James Forrestal Campus, ext. 2754.

Patent Booklet

Inventors can discover their role in the PPL patent procedure by reading "You and the Patenting Process", now available from the Technical Information Office.

The booklet, produced by the DOE, covers general patent information. Specifics relating to DOE contractors are also included.

To obtain a copy of the booklet, contact the Technical Information Office at ext. 2659.

Fire Safety

Employees are reminded that coffee pots, portable electric heaters and other electrical appliances should not be plugged in and left unattended for extended periods of time. A potential for fire can occur if the water in a coffee pot is allowed to evaporate and the pot starts to overheat. Heaters left on overnight can also pose a fire hazard.

Each person with a coffee pot or electric heater must take personal responsibility to make certain it is not left on while unattended. For those to whom this represents a problem, one possible solution is a timer, which will automatically shut off the coffee pot or heater after a certain time.

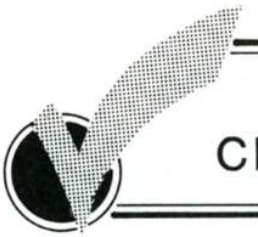
Coffee pots and heaters left on overnight will be subject to confiscation by security.

Lost Glasses

LOST—Eyeglasses with plastic lenses, and "FMS" engraved on the metal frames. Lost at the Accounting Department party at the Gun Club October 23. If found, call Flo Short at ext. 3522.

Holiday Dinner Dance

PPL's annual Holiday Dinner Dance will be held December 11 at Cedar Gardens in Hamilton Square. Tickets, which are $15 for dinner and dancing and $8 for the dance alone, are on sale at the C-Site reception desk through December 9.



Security Checkpoints

Employees in the PPL community can contribute greatly to their own protection by following these tips for preventing thefts:

- Personal property (such as purses, brief cases, etc.) should not be left unattended.
- Lock your office door or your desk when you leave, even if it's only for a few minutes.
- Make a list of all serial or model numbers of your office equipment and personal property and keep it handy.
- Watch for suspicious individuals who have no business in your area; report them to Security immediately.
- Familiarize yourself with the numbers to call to report incidents, such as suspicious persons, illness, fire, and so on.
- When reporting a theft, be able to give identifying information to investigators. Include the make and model, license numbers, color and identifying characteristics of your vehicle; the model and serial numbers, brand names, and identifying characteristics of your property; the sex, color, height and weight, clothing, other personal characteristics (such as a beard, mustache etc.), and the method and direction of travel of any suspicious persons.

Call 3333 in case of an emergency, or call 2536 to report any other type of violation. By following these simple measures, you can aid the Security Office in safeguarding laboratory and personal property.

HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

Vol. 3, No. 5 December 21, 1981

TFTR VALVE PASSES TEST

The fast shutter valve for the first of TFTR's neutral beams has successfully completed its acceptance tests.

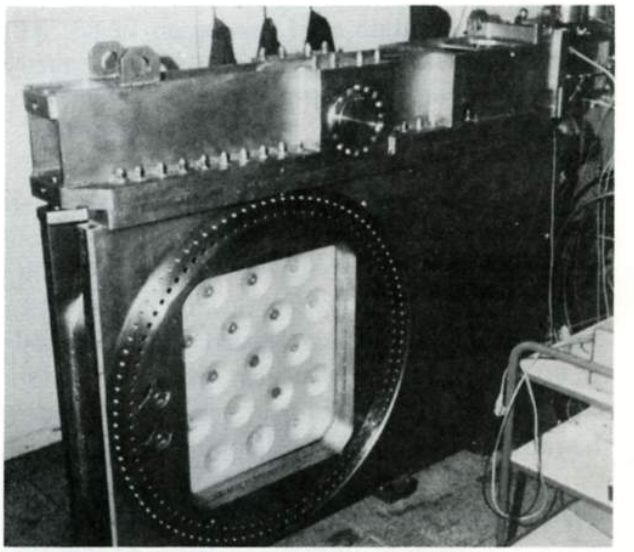
The fast shutter valve will be installed between the neutral beam line and the beam entry port on TFTR. It reduces the number of particles that drift back into the neutral beam after the source is fired into the tokamak. It functions in conjunction with the source, and must cycle within 150 milliseconds.

The unit was delivered to PPL from Leybold-Heraeus in October. It was fitted with hydraulic lines and electrical power as part of its acceptance testing procedure. Monitors were set up on both sides of the valve, and a known amount of gas was injected into the unit. Measurements determined the amount of leakage through the valve, which has a specified leakage rate of 50 liters per second. At the conclusion of the recent acceptance tests, valve leakage was found to be between 25 and 30 liters/sec after 1200 test cycles. The valve is expected to complete approximately 25,000 cycles in high vacuum before maintenance will be required.

The fast valve shutter is constructed of aluminum, to be as stiff and as light as possible. The shutter moves so quickly heavier metals would have created an unacceptable load on the connecting shaft and axles

The unit utilizes a hydraulic drive system. The valve is operated from a control panel incorporating solenoid valves. The solenoids open and close various ports along the hydraulic piping system. Oil is driven through the ports to hydraulic pistons on top of the valve.

The valve will now be sent back to the warehouse to await the final placement of the neutral beam system.



The fast shutter valve, with the shutter gate closed.

The team that conducted the acceptance test on the fast shutter valve included (left to right) Rainer Klose, technical engineer for Leybold-Heraeus; TFTR neutral beam technicians Harmut Gentzik and Carl Bunting; and cognizant engineer Ken E. Wright. Not pictured are technical associate Vic Garzotto and Bob Walls of the Vacuum Shop.

RF Heating Experiments On TFTR

To bridge the gap between radio-frequency (rf) heating experiments currently being done on PLT and the development of rf systems for use on future devices, PPL experimenters hope to do substantial investigation of rf heating on TFTR. Rf heating involves the introduction of high-frequency radio waves into the plasma and using the energy of these waves to heat ions and/or electrons.

Although planning is now in the early stages, work is expected to center on the ion cyclotron range of frequencies (ICRF). Sometime late in 1983, the 3-MW, 42-MHz ICRF system now on PLT will be transferred to TFTR; the frequency will be raised to 60 MHz. The system will be used primarily for first harmonic heating of hydrogen, and for second harmonic deuterium and helium-3 heating.

The main part of the TFTR ICRH program would not begin, however, until about 1986. At that time two enhancements are planned. Physicists hope to be able to add 20 MW of ICRF heating at 80 MHz. Not only would this allow experimentation within a wide range of conditions, but it would also provide enough heating power to supplement the neutral beams, allowing TFTR to operate with extended parameters.

The other major component of the TFTR ICRF heating program is the addition of a 3-MW, 180-MHz system in about 1985. This system would be used to answer several questions related to the use of waveguides for ICRH. The TFTR set-up would use a dielectric-loaded waveguide. The dielectric would enable the waveguide to be considerably smaller than a conventional air-filled waveguide, similar to those presently in use.

Several major questions related to the use of rf heating on future machines, most notably the Fusion Engineering Device (FED), will be explored on TFTR. Studies will be done to better understand the mechanisms by which rf waves couple to the plasma, and the effects of this coupling on plasma behavior in a large tokamak. The effects of radiation and severe thermal stress on rf equipment, especially antennas and waveguides, will also be evaluated.

Thanksgiving Savings

Thanks to the Utility Equipment Shutdown program, developed as part of PPL's energy conservation measures, the laboratory was able to save approximately $10,000 in energy costs during the Thanksgiving holiday.

Under the plan, initiated and directed by Energy Systems associate Richard Terhune, boilers, chillers and HVAC systems on A and C-Sites were turned off during the holiday period. According to Frank Fumia, chairman of the Energy Management Administration Committee, approximately $5,000 in fuel oil costs were saved by the shutdown. An equivalent savings in electrical energy was also realized, Fumia added.

John Pacuta, supervisor of power plant operations, handled the shutdown of the power plants. The shutdown of the electrical and HVAC systems was handled by Robert Longmuir, supervisor for mechanical trades.

Shuttle Rerouted

Transportation Services is anticipating extending the current shuttle route at C-Site in the near future. Under the new routing plan, when the shuttle arrives at the LOB from A-Site it will turn right and continue around the C-Site complex in a clockwise direction. It will pass the Tech Shop, TFTR, MG and ESAT buildings, Plant Maintenance and Operations, the Ebasco trailers, Receiving 3 & 4, the fire house, and the C-Site Security entrance. The shuttle will stop again at the LOB outbound to A-Site.

These changes, which are expected to begin after January 1, will be contingent on the completion of the inground construction in the area of the Tech Shop—RF courtyard.

United Way

PPL employees can be good neighbors by contributing to the United Way during its "Neighbors Helping Neighbors" fund drive.

A tax-deductible donation to the United Way will help 24 voluntary agencies in the Princeton area provide service for young and old alike. Day care, family counseling, care for the aged, assistance to the handicapped, and aid from the Red Cross are just some of the programs offered by United Way organizations.

There has been a 300 percent increase in the use of United Way services since 1977; approximately 60,000 people were helped by the Princeton area United Way last year. This year's total is expected to go even higher, despite governmental budget cuts and service reductions that threaten to curtail a majority of these vital services.

PPL United Way volunteers are distributing donation forms and brochures about United Way services throughout the laboratory. Anyone who has not received the form or brochure should contact Len Thomas of Personnel at ext. 2036.

Fire Safety

The U.S. Consumer Product Safety Commission (CPSC) has issued guidelines that can make fireplaces and wood-burning stoves energy savers rather than safety hazards.

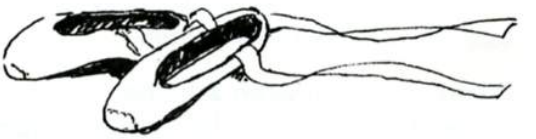
The CPSC recommends that fireplaces, wood stoves and chimneys be inspected once a year to assure proper operating condition. The correct fuel for each fireplace or stove should be used, and consumers should guard against overfiring their stoves. Such overheating could cause a fire in structures adjacent to the stove.

Combustible materials, such as paper, kindling, draperies and the like, should be kept away from stoves and fireplaces. Children should not be allowed to touch fireplace screens or stove exteriors; either can cause bad burns.

Glass doors or fireplace "inserts" both reduce the amount of heated air escaping up the chimney. The Commission suggests that householders add only the accessories designed and approved for their fireplace or stove. Use of other accessories may block air vents, creating excessively high temperatures in the fireplace or stove.

For additional information on installing wood-burning stoves and fireplaces, contact the Commission's toll-free Hotline at 800-638-8326.

N.Y. Ballet Tickets



The Princeton University League is offering tickets to the Saturday matinee performances of the New York State Ballet to league members. Tickets are available for "A Mid-Summer Night's Dream" January 16; "Divertimento No. 15," "Agon," and "Union Jack" February 6; and "La Source," "Andatino," "Meditation," and "Vienna Waltzes" February 20. All performances are at Lincoln Center in New York City.

The Princeton University League is open to all University staff members. Information on membership is available from the league offices, 171 Broadmead, or by calling 452-3650.

Exhibit

The Princeton University League is sponsoring an exhibit of photography by T. Wayne Roberts at the league offices, 171 Broadmead, through January 22.

Roberts has photographed nature in Maine, Utah, Wyoming, Greece, Cape May and Princeton. His work has been shown at the New Jersey State Museum, the Audubon Society in Cape May, and in other New Jersey locations.

League offices are open from 9 a.m. to 1 p.m. daily.

SPOTLIGHT ON

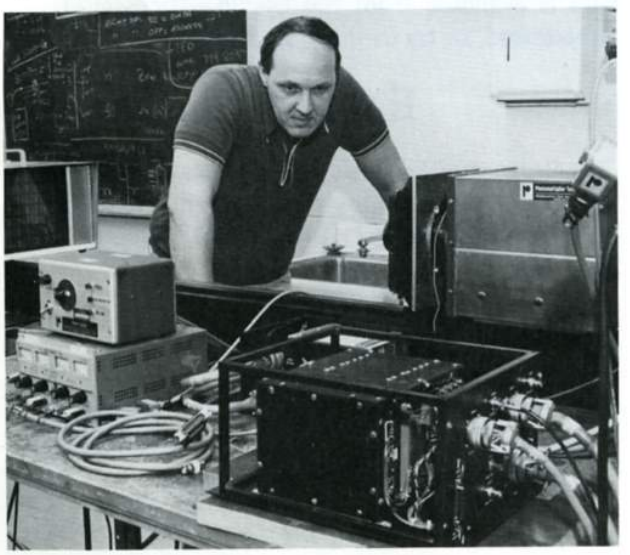
Electro-Optics Group

Although most laboratory employees think of PPL as A, B and C-Sites, there's another group of PPL people working at a fourth "site". Visit Peyton Hall on main campus, and you'll find the Electro-Optics Section, headed by John Lowrance—a section that joined the laboratory en masse.

John is section head of the group, part of the Diagnostic Branch of the Engineering Division. Section employees include Stephen Hayes, Donald Long, George Renda, Paul Zucchino, William Harter, Robert Hoch, Vincent Mastrocola, John Opperman, David Ciotti and Andrew Siroki.

The section was begun when John came to the Astrophysics Department of the University from RCA Astroelectronics 15 years ago. "Our project was to develop instrumentation for space astronomy," John explained. "Twelve years ago, we began doing some work for PPL, using our special skills in non-standard television for their nuclear fusion work."

The Electro-Optics section started working on TV Thomson Scattering with Dirck Dimock's Laser Group, and slowly began doing more and more work for PPL. Approximately three years ago, the group "administratively became a part of PPL," according to John. The section now devotes approximately 75 percent of its time to PPL activities, with the remainder going to the Astrophysics Department.

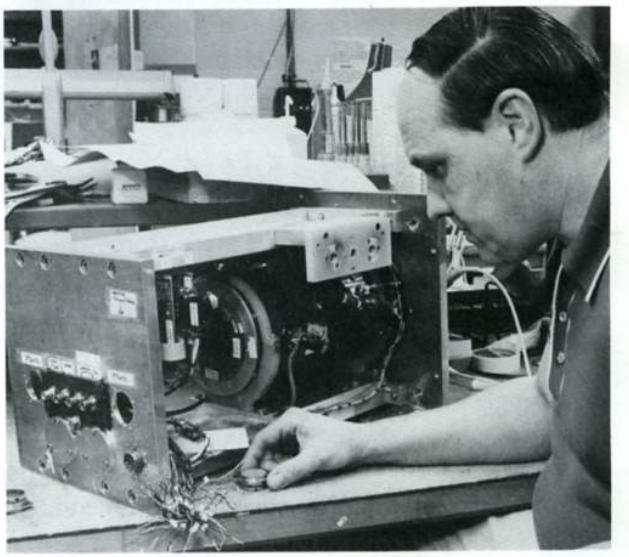


That astrophysics work entails grants and contracts, including studies for a space telescope and its accompanying detectors. The group is developing television imaging systems to replace film in space. Since the wave length range and sensitivity of TV-type detectors is greater than photographic film, electro-optic sensors allow for spectrographic measurements and imaging impossible to obtain in any other way.

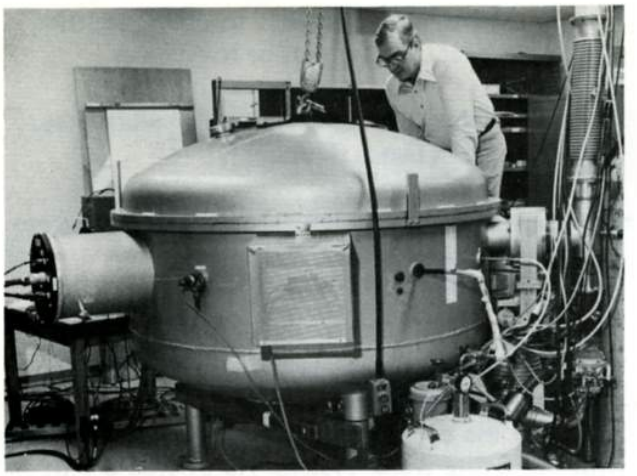
"Our work for PPL and for the Astrophysics Department was synergistic, " John said, "since many detectors for nuclear fusion diagnostics also have applications to astronomical measurements, especially in the ultraviolet and infrared."

Among the section's numerous projects is a plasma television system for TFTR. The system consists of a 20-foot periscope, which will transmit images of the interior of TFTR through the six foot test cell floor which shields the diagnostic intruments below.

The plasma TV employs a high frame-rate TV camera to record the visible plasma. A second measurement in the near-infrared spectrum (also



Bill Harter examines a charge coupled device (ccd) test camera being developed for TFTR (at left). Above, Bill works on a ccd observation camera (Obscan) which will be mounted on the Kitt Peak Observatory telescope.



Bill Opperman monitors a vacuum chamber containing a focus coil assembly. The assembly will be part of a windowless ccd being developed for a sounding rocket payload.

George Renda (left) and Vincent Mastrocola run a calibration check on a bolometer chassis.

employing a CCD TV camera) will tell scientists the temperature of the vacuum vessel inner wall; such data allow calculations of the neutral beam energy striking the wall. The system will also enable inspection of the vessel interior by television and film imaging, documenting the condition of the vacuum vessel walls.

The periscope, constructed by Instrument Technology Inc. of Westfield, MA, recently completed its acceptance tests. It is expected to be delivered to PPL this month.

John pointed out that the difference between the diagnostic instruments for TFTR and those for PDX and PLT is that " there will be a lot more neutron and gamma radiation produced as we approach the breakeven point. Detectors and electronic components that are acceptable on PLT and PDX because of the lower radiation can't be used on TFTR."

For example, in TFTR the bolometer (which measures all the energy radiated by the hot plasma) employs platinum thin-film resistors as the detector. These platinum resistors must be used instead of the thermistors previously used on PLT and PDX, due to the susceptibility of such metal oxides to neutron damage. The platinum bolometers developed for TFTR will be installed on PDX for testing in the next few months.

The group is also active in the TFTR Thomson Scattering experiments, "which were our entree into PPL," according to John. This instrument utilizes an intensified charge coupled device (ICCD), which in this case is a solid state image sensor composed of an array of 160,000 photo-diodes. The image intensifier allows the optical image to be reduced electro-optically, rather than optically—simplifying the optics and increasing the sensitivity of the sensor.

In the space astronomy field, the Electro-Optics section is developing a windowless intensified CCD, to be used as a sounding rocket payload. The CCD, combined with an eschelle spectrograph, will make measurements in the 900 to 1200 angstrom region, gathering data on the interstellar medium.

The CCD has been developed primarily for broadcast television (and more recently for still photography), but the section is continually pushing the state-of-the-art applications of CCD's for infrared, ultraviolet and soft X-ray measurements.

T.O.U.R.S.

As we mentioned in our last issue, tourism at PPL is booming. We'd like to acknowledge our guides and speakers for the month of December. Our 230 quests were escorted through PPL by Stu Foote, Bob Fleming, Diane Carroll, Charlie Bushnell, Sal Cavalluzo, Harold Johnson, Ernst de Haas, John Coonrod, Al von Halle, Stan Schweitzer, Felix Ullrich, Myron Norris, Henry Chandler and Al Swain. Thanks for a job well done!

Chemical Cautions

While many chemicals have the ability to become hazards, proper handling methods will prevent any threat of toxicity. Listed below are several guidelines for handling chemicals:

- Food and drink should never be stored, prepared or consumed in areas where chemicals are stored or used. Chemical residue on tables or other surfaces can easily contaminate food.
- Before using any chemical, read the label or the Material Safety Data Sheet, available from the stockroom for stockroom-supplied items. Material data sheets may also be requested from the manufacturer when items are ordered through Purchasing.
- Use adequate ventilation. This may include use of fume hoods and dust collecting systems. Never use a chemical in a confined area without proper ventilation. If the chemical is flammable, insure that the vent system motor is explosion proof.
- Wear impermeable rubber gloves. Many chemicals can enter the body through the skin; never wear cloth gloves when handling chemicals.
- If there is a potential for a chemical splash or spill, chemical splash goggles, boots and apron should be worn.
- Never wear contact lenses when working with chemicals. If a chemical is splashed into the eyes with contacts in, the lenses must be removed before treatment begins. (See HOTLINE, April 9—Eye Wash Fountains)
- All chemicals should be stored in approved containers, clearly labeled for chemical content and hazard.
- Never mix chemicals together when you are unsure of their properties. Many chemicals can react together, emitting heat, toxic vapors or toxic gases.
- When leaving the chemical work area, wash hands thoroughly.

ERC Notes

The ERC met on Wednesday, November 25. During committee reports, Ken Semel of Health & Safety addressed the committee on the recent problem with the C-Site water system. He offered a time sequence of the events in the incident and explained his department's role in rectifying the problem. It was noted that many people in the lab do not know the proper department to notify when they suspect a problem; this often results in problems not being solved as quickly as they could be.

Under new business, it was voted to change the ERC meeting schedule from twice to once a month. Beginning in January '82 the committee will meet on the first Wednesday of each month.

Several issues were raised, along with questions as to the ERC's justification for involvement in them. Chairman Larry Michaels volunteered to look into them personally and report back to the committee.

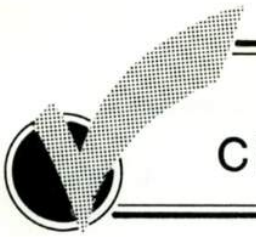
The long-awaited reclassification of monthly employees was discussed. It was decided that Steve Iverson would be questioned regarding its current status.

Singles Social

The Princeton University League's first singles wine and cheese social of the new year will be held January 14 in the Fine Tower faculty room. Monthly socials will also be held on February 11, March 11, April 15 and May 13.

The League has been sponsoring the singles socials program for the past year.

All single members of the University faculty and staff are invited to attend.



Security Checkpoints

The University is responsible for maintaining a safe atmosphere for its employees. Traffic regulations are a very important part of maintaining that atmosphere.

Traffic signs have been posted at specific points to identify problem areas. For example, stop signs have been posted in potential collision zones. Yield signs are present to allow for smooth traffic flow. Handicapped parking is provided for individuals with mobility problems. Speed limits ensure the safety of pedestrians and motorists alike.

It is the responsibiltiy of the Security Department to enforce the traffic regulations. It is the responsibility of the employees to adhere to the traffic regulations.

Stop signs should be obeyed by coming to a complete stop. Speed limits should be obeyed to ensure the safety of all. Handicapped zones should be used only by those who have special handicapped parking permits. New Jersey state statutes regulate handicapped parking; *it is not a University policy.*

At the time of employment, each employee signs a waiver guaranteeing his adherence to the traffic regulations, as explained in the motor vehicle manual. It is the responsibility of the employee to read and understand the parking and traffic regulations.

Questions should be directed to the Security Department at 683-2893.

Combatting The Cold

People who are outside in low temperatures and strong winds tire easily, becoming susceptible to frostbite as exposed skin surfaces cool rapidly. Strong winds, combined with a temperature slightly below freezing, can have the same effect as a still-air temperature about 35 degrees lower.

To determine how much protection you really need, refer to the wind-chill table below. At wind-chill equivalent temperatures below -25°F, exposed skin can freeze within one minute.

WIND-CHILL EQUIVALENT TEMPERATURES (°F)

Calm Air	At 15 MPH	At 30 MPH	At 40 MPH & Over
30	9	-2	-6
20	-5	-18	-22
10	-18	-33	-38
0	-31	-49	-54

If you must go outside in cold weather, observe the following safety measures:

- Avoid Overexertion: Cold weather itself puts an extra strain on the heart without any physical exertion. If you add the strain of heavy physical activity (such as shoveling snow, or simply walking too far or too fast), you risk damaging your body.

- Dress Warmly: Wear loose-fitting, layered, lightweight clothing. Outer garments should be tightly woven and water repellent. Wear a hat, since most body heat is lost from the head. Protect your face and cover your mouth to protect your lungs from very cold air. Wear mittens instead of gloves; they allow your fingers to move in contact with one another, keeping your hands much warmer.

- Watch for Frostbite: Frostbite causes a loss of feeling and a white or pale appearance in the extremities. If such symptoms occur, get medical attention immediately. DO NOT RUB WITH SNOW OR ICE; this does not help the condition, and in fact will aggravate it. The best treatment for frostbite is the slow rewarming of the affected tissue.

When the body begins to lose heat faster than it can produce it, a condition called hypothermia results. The symptoms include uncontrollable shivering; vague, slow or slurred speech; memory lapses, or incoherence; immobile or fumbling hands; frequent stumbling, or a lurching gait; and apparent exhaustion.

Many people who have suffered overexposure to cold or wet and windy weather don't realize the seriousness of their danger. Take the following measures for overexposure, even if the victim claims to be in no difficulty:

- Get the victim into dry clothing, then into a warm bed or sleeping bag with a "hot" water bottle (which should actually be warm to the touch). Keep the victim quiet, applying warm towels, a heating pad or some other heat source. Concentrate heat on the trunk of the body, lowering the head and raising the feet to get warm blood circulating to the head.

- Give the victim warm drinks, but NEVER give alcohol, sedatives, tranquilizers or pain killers; they only slow down the body processes even more.

- Do not jostle, massage or rub the skin, which is very susceptible to tissue damage when extremely chilled.

- If symptoms are extreme, call for professional medical assistance immediately.

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 Information Services, Module 2, C-Site, James Forrestal Campus, ext. 2754.

INFORMATION SERVICES WISHES YOU ALL A HAPPY HOLIDAY SEASON!

HOTLINE
PRINCETON PLASMA PHYSICS LABORATORY
Vol. 3, No. 6 January 21, 1982

Testing Continues On TFTR Rectifier

Phase I testing of the first ECS thyristor-rectifier, the first of twenty which will power the TF field coils on TFTR, was successfully completed by the Rectifier Section of the Energy Systems Branch December 16.

According to project engineer Charles Ancher, the 44-MW rectifier was received at PPL May 15. After some retrofitting work, testing of the unit's basic design parameters and protective systems began. The testing program was conducted with CICADA computer control.

The high-power testing, which was done in the TFTR Field Coil Power Conversion Building, involved installing the rectifier, connecting the power and control cables, providing a cooling water system, and energizing the unit in a carefully preplanned sequence of steps. "We wanted to find out whether the unit could operate successfully under certain failure conditions, and it came through the testing quite well," Ancher said. He added that "The rectifier had successfully carried 22 kiloamps at 2,000 volts during testing, and had also survived a line-to-line short circuit test."

This was the first time the unit had been tested, and Ancher said the entire resistor yard behind the FCPC building was used as a load because a place was needed to dump that much energy. "We knew we were successful when a cloud came from the resistor bank on a rainy day, like steam from a steam iron," he reported.

Testing was conducted by Charles Neumeyer, Charles Ancher, Vernon Covey, Frank Dreher, Peter Haney, Fred Kloiber, Frank Lawn and John Opperman.

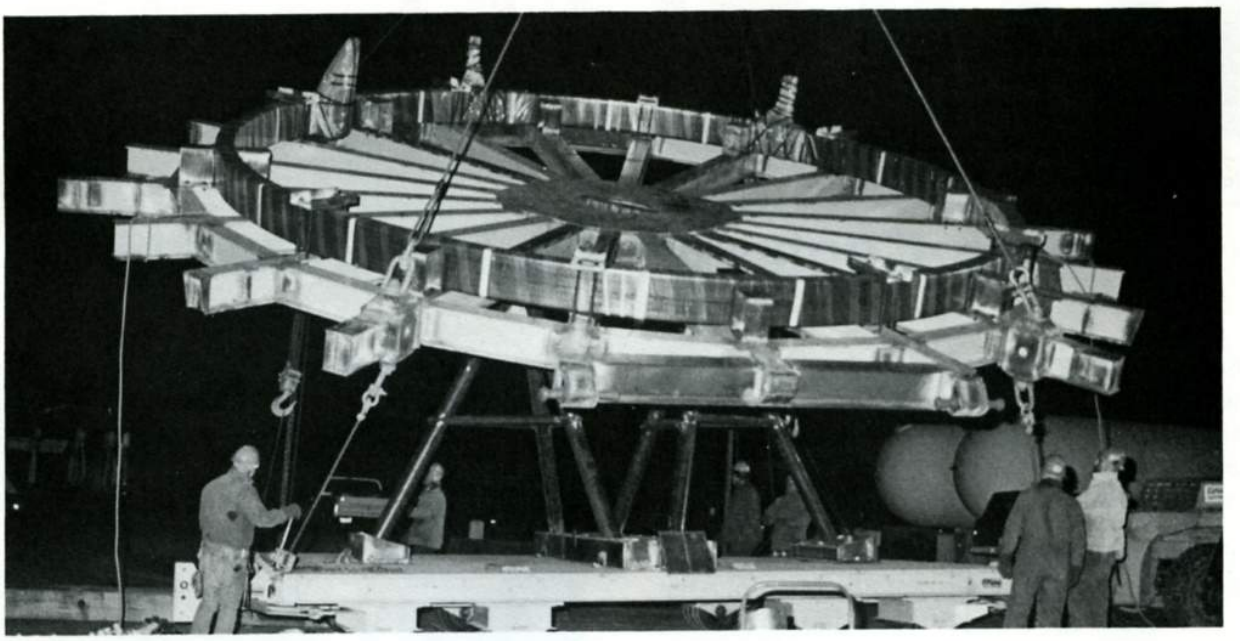
The group that tested the ECS thryristor-rectifier included (front, left to right) John Opperman, Peter Haney, (rear, left to right) Charles Neumeyer, Vernon Covey, Charles Ancher and Fred Kloiber.

The unit will now be prepared for Phase II testing, which will determine the unit's capabilities under operating conditions involving 24,000 amps at 2,000 volts. Testing of units two and three, installed at the FCPC building last month, will begin in mid-January. A total of 39 units will be installed for TFTR operations.

New Hours

In order to better schedule work flow, the A-site petty cash area (Room 107, Bldg. 1-E) will only be open from 9 to 10 a.m. and from 2 to 3 p.m. daily.

TFTR Coils Moved



A tilting frame, to which Stack 8-B of the TFTR poloidal coil system is attached, is lifted before being tilted through the door at the test cell. The stack, which has a 26 foot diameter and weighs approximately nine tons, is the first of four stacks fabricated at the PPL Coil Shop to be moved to the TFTR site.

Policy Manual

As a result of one-and-a-half years of effort by various committees in conjunction with the Personnel Department, the laboratory now has its first personnel policy and practices manual pertaining to all staffs.

Although the Personnel Department was responsible for the manual's initial development, the Administrative Operations Committee, the Employee Representatives Committee, the Engineering and Scientific Staff Advisory Committee, the Laboratory Council and the University Oversight Committee all provided input during the formulation of the manual.

Director of Personnel Services Steve Iverson said the manual was developed as a tool to help supervisors manage their departments. He added that the manual provides "a common base" for all supervisors, as well as a "uniform set of policies and procedures". It is extremely important that all employees are assured of consistent treatment in the management decision making process.

"In the past, " Iverson said, " some of the laboratory's practices were not spelled out in a written format. As a result, a significant number of supervisors and employees were never really certain whether or not their actions were consistent with the policies and intent of the management of the laboratory. This manual permits supervisors and employees to know what policies and procedures are in existence at the laboratory."

The manual encompasses approximately 30 policies in the areas of employment, benefits, compensation, employee relations, training and services, and replaces related University policies contained in the various University handbooks. All policies are written in "plain English", and new policies will be added to the manuals as they are approved. Distribution of manuals will be recorded by the Personnel Office in order that all holders receive all updated information.

While the policies are modeled after University policies, several reflect "the unique nature of the

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Manual cont'd

laboratory's operations," Iverson continued. "Such policies include provisions for flex-time, performance appraisal, service awards, allocation of overtime, and so on."

Manuals have been distributed to all supervisors, and workshops are being held to assist supervisors in understanding and interpreting various policies. Employees interested in examining the manual should direct requests to their supervisors.

T.O.U.R.S.

Our post-Christmas praises go to the 14 hardy souls who led visitors through PPL's halls in January. Thanks go to Dick Palladino, Bob Applebaugh, Al von Halle, Suzen Bayer, Sid Medly, Stu Foote, Felix Ullrich, Bob Krawchuck, Pat Colestock, Diane Carroll, Halsey Allen, Harold Eubank, George Martin and Al Swain for their help!

Cafeteria Changeover

A three-year subcontract, covering the operations of the C-Site cafeteria and vending machines, has been granted to Interstate United of South Plainfield. The company, which also provides food service for FMC Corporation and E. R. Squibb & Sons, is scheduled to take over cafeteria operations January 25.

The firm was selected from four companies screened by the Ad Hoc Cafeteria Committee, composed of chairperson Nancy Jones, Olga Bernett, Don Muschal and Louise Tindall. Committee members visited several area companies where prospective vendors operate to assess their programs prior to making recommendations. Victor Gambino of Procurement worked closely with the committee.

In addition to unanimously recommending Interstate United, the group also suggested that a committee of regular cafeteria users be appointed to work with liaison Ruth Donald and Robert Smart, Associate Head, Administration Department, to monitor user satisfaction with the new service.

More information on the cafeteria change over will be available in the next edition of the HOTLINE.

Safety Glasses Program

Starting February 2, an optician from the Fend-All Company of Clifton will make a monthly visit to PPL as part of the employee safety glasses program.

The optician will be available from 10:30 a.m. to noon in Room B-137, LOB on the first Tuesday of each month. Employees may purchase safety glasses, as well as dress glasses and sunglasses, through the program. Glasses brought through the program cost approximately 40 percent less than retail glasses.

Employees participating in the program should consult the frame style and lens price lists posted on bulletin boards throughout the lab. After choosing a frame and lens type, employees should bring their prescription to the optician. Prescriptions can also be taken from a current set of glasses by the optician.

A deposit equalling the price of the lenses will be required at the preliminary visit to the optician. Glasses will be delivered the following month, when the balance will be due. Those wishing to receive their glasses immediately may pay the entire cost at the time of their first fitting, and have the glasses shipped directly to their home.

Any adjustments in the glasses, or verification of the prescription, can be made by the optician at the time of delivery and final fitting.

Further information about the program is available from Dick Carlese of Health and Safety, ext. 2533.

Singles Social

The Princeton University League will hold its monthly singles wine and cheese social February 11 in the Fine Tower faculty room. All single members of the University faculty and staff are invited to attend.

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 Information Services, Module 2, C-Site, James Forrestal Campus, ext. 2754.

Blairstown Weekends

Continuing a successful three-year tradition, the Princeton Education Center at Blairstown will be open to the University community for two Family Winter Weekends, February 13 and 14 and Feb. 27 and 28. The Center is located 65 miles northwest of Princeton.

Faculty, students, staff and their family and friends are invited to the Center to enjoy comfortable lodging in wood-heated cabins. The solar bathhouse provides a sun-heated shower, and hearty meals will be served in the skylighted log dining hall.

Weekend activities include ice skating and cross-country skiing on a weather-permitting basis. Instructions are free, and rentals are available nearby. Games will also be available, as will guided explorations of the winter woods, bird watching, tracking and ice fishing. Special activities encompass sessions on wood, wood stoves and wood-splitting, energy conservation ideas for the home, and winter activities for children.

Stargazers can take advantage of the Center's telescope and star finder. Those interested in more sybaritic pursuits can relax in front of the large fireplace in the Headquarters Building.

Activities during the second weekend will be similar to those of the first, with the addition of optional sessions in winter skills, survival and adventure. Guests will also be permitted to go through the Center's challenge courses.

Cost per person is $30 for adults, $15 for children under 16 and five dollars for children two and under. Fees include lodging and meals from Saturday noon through Sunday brunch. Those interested in arriving Friday evening may choose to do so at an additional charge of eight dollars per person for lodging and Saturday breakfast.

Reservations must be postmarked by Feb. 5 for the Valentines's Day weekend, and by Feb. 10 for the second weekend. All reservations will be accepted on a "first come, first served" basis, with a limit of 50 per weekend.

To receive a reservation flyer with further information, contact the Center's office at Maclean House, Princeton University, 452-3340.

Apprenticeship Program

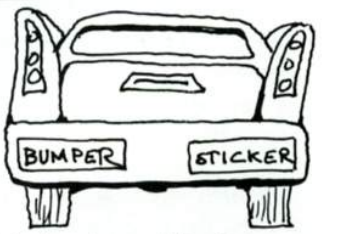
The PPL Employment Section, in conjunction with Mercer County Community College, is sponsoring a skilled crafts apprenticeship program at the lab.

According to Barry Cohen and Chris Legaard of the Employment Section, the program allows laboratory craftspeople to upgrade their skills in professional craft categories such as welding, metalsmithing or electronics. A nationally recognized journeyman certificate is granted upon successful completion of the program, with registration fees and course costs paid by PPL.

Terms of apprenticeships vary with the skills involved. Apprentices attend evening classes at local schools for theory background, testing and some hands-on work. Further hands-on experience in conjunction with the apprentice's skill area is provided at the laboratory. "That's so people will know why they're doing things as they do," Barry explained. "The employee then becomes more proficient, so the program affords growth potential for both PPL and its employees."

Anyone interested in further information on the program should call Barry at ext. 2037 or Chris at ext. 2401.

Bumper Stickers



A new bumper sticker with the slogan "Positrons Are Another Matter" is now available from the Astronomical Society of the Pacific.

The Society also produces a whole series of astronomical bumper stickers, which include such slogans as "Black Holes Are Out of Sight" and "Supernovae Are a Blast." Income from the sale of these stickers is used to support the non-profit Society.

For a complete catalog of their bumper stickers and other astronomical materials, please send a stamped self-addressed envelope to Astronomical Catalog, A.S.P., 1290 24th Avenue, San Francisco, CA 94122.

TFTR Parking

PPL employees—especially those who have occasion to work at the TFTR site— should note that general parking is not available on the site. Because of the "exclusion area" concept, long-term plans for the site provide only a few short-term parking spaces near buildings. The existing open areas still belong to the construction contractors, for their exclusive use for storage and parking for their own employees.

In order to accommodate the necessary movement of tools, equipment and materials into and out of the TFTR buildings, six parking spaces have been provided. If you must park outside of a designated space, be sure to leave a note on the windshield for the Security Officer. Any special problems involving parking or other access to the TFTR site should be referred to Halsey Allen or the Security Office.

The shuttle route has been altered to pass between the TFTR site and the Tech Shop, RF and Maintenance Buildings. We expect to provide some additional walkways in the vicinity of the cooling towers.

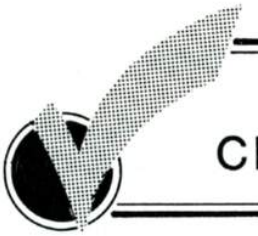
Taking occupancy of the buildings at the TFTR site is a significant milestone in our progress toward the goal of an operational tokamak. Everyone's cooperation and assistance in working out the "bugs" that will inevitably occur as we proceed is most appreciated.

Dance Classes

The popular ballroom dance instructions sponsored by the Princeton Get-Away Club and the University League resumed January 13 with lessons in fox-trot and cha-cha. Mr. Gary, a professional dance instructor, leads the class.

The series of five lessons will be held on Wednesdays from 8 to 10 p.m. in the Dorothy Brown Room at 171 Broadmead. The cost is $20 per person for the series, payable in advance. Send checks to Princeton Get-Away Club, Dod Hall Mail Room, Princeton University.

For further information, call 921-6620 after 5:30 p.m.



Security Checkpoints

(This is the first of three installments, outlining security tips for University employees on vacation, at home or at the office)

While you are away from home:

- Never leave notes that indicate your absence.
- Make sure windows and doors have been secured.
- Do not leave "hidden keys".
- Leave a key with a trusted neighbor who can make periodic checks on your home.
- Arrange for lawn maintenance as well as for mail and newspaper pick-up.
- Do not publicize your planned absence.
- File a "vacant house" report with your local police department.
- Try to create a lived-in appearance; put lights and radios on timers, and leave shades and blinds in normal positions.
- If you return home and find that your home appears to have been entered, *Do Not Enter*—call the police.
- Close your garage door, even when leaving on short shopping trips. Garage doors can be easily secured for longer absences by placing a padlock through the roller track.

While at home:

- Install new locks when you move into a new house or apartment.
- Install double cylinder locks on outside doors, especially those with glass panels.

cont'd

Security cont'd

- Install window locks or drill and pin the sash.

- Trim shrubbery and remove obstructions that could conceal a burglar breaking into your house.

- Don't reveal your phone number or address to unknown callers

- Separate home and auto keys when leaving your car in a parking lot.

- Remove all identification from your key ring.

- Protect the exterior or your home with lighting.

(Next Time: More Home Security Tips)

ERC Notes

The ERC met on Wednesday, December 9. Joe Stencel of Health and Safety explained forthcoming changes in the radiation badge monitoring program. Due to the budget crunch, many employees will now receive badges which are processed yearly instead of monthly.

The Cafeteria Committee reported that their recommendation to Robert Smart was to select Interstate United as the new vendor for the C-Site cafeteria.

After some discussion, it was decided that the ERC would invite a representative of the credit union to attend a subsequent meeting to answer questions and listen to employee concerns.

It was brought to the attention of the committee that many people were dissatisfied with the quality of the safety shoes this year. Those wishing to order shoes from Iron Age (last year's supplier) may do so, and apply for reimbursement individually.

The misuse of the visitor parking area by laboratory staff will be looked into by the chairman.

The possibility of establishing a surplus material shop at the lab will be discussed at the next meeting.

Acid Cleaner Warning

The National Poison Center Network has warned that hydroflouric acid, used in many home cleaning products, is a particularly dangerous ingredient if not used with care.

Even in solution, hydroflouric acid is a corrosive chemical that can cause severe skin burns. The severity of these burns may not be immediately apparent, even for as long as 24 hours after contact. Initial symptoms may include a slight burning or tingling sensation on exposed skin.

If left untreated, the acid attacks cells deep in the skin and bones of the exposed area. Fingernails and the ends of the fingers may be lost without immediate treatment. The acid can also make the eyes burn and swell, and can cause the symptoms of an upper respiratory infection.

To avoid such problems, carefully check the label of any cleaning product prior to use. If hydroflouric acid or "HF acid"is mentioned, wear rubber gloves and use the cleaner only in a well-ventilated area.

If you suspect even a mild exposure to hydroflouric acid, call the local poison control center immediately.

Art Exhibits

An opening reception for artists Kristin Naumann and Karen Bowen will be held at the Princeton University League Offices, 171 Broadmead, January 24 from 2 to 4 p.m. Naumann's desert country landscapes and Bowen's soft sulptures will be on exhibit in the league offices, through February 19.

League offices are open from 9a.m. to 1 p.m. daily.

The next exhibit at the Squibb Gallery will be the works of Princeton's Naomi Savage, opening Jan. 26 and running through Feb. 26. The Squibb Gallery is located in the world headquarters of E. R. Squibb & Sons, Inc. three miles south of Princeton on Route 206.

Gallery hours are 9 a.m. to 5 p.m. Monday through Friday, and from 1 to 5 p.m. on weekends. Thursday hours are extended to 9 p.m.

Energy Conservation

Many questions were raised concerning our electric costs as a result of the recent HOTLINE article on conservation. Whereas your home electric bill is based on total consumption (number of kilowatt hours used), the PPL bill is based on both total consumption and "demand." The demand charge is based on the maximum rate at which we used electric energy during the billing period.

The PPL electric bill has been compared to a car rental in which the bill was based not only on miles driven (consumption) but also on the maximum speed driven (demand). The demand charge is imposed by utilities to discourage sharp peaks in consumption. The funds derived from "demand" charges are used by electric companies to provide and assure adequate facilities for continuous on-line service, even during periods of maximum consumption.

As you can see from the table, demand is a major part of the PPL electric bill. It behooves us to do everything possible to shut off lights and nonessential consumption during maximum demand periods.

Turning off a 1,500 watt electric heater during a maximum demand period will save over $11; turning off a couple of chillers for an hour or so last summer saved over $10,000.

Principally by controlling demand but also by curtailing consumption, we hope to reduce the PPL bill from an estimated $4.7M to $3.0M. These savings can be used to provide relief to financially distressed experimental programs.

PPL ELECTRIC CHARGES

	1981	1982 (est.)(1)
Consumption Charge -		
8 a.m. - 10 p.m. M-F (on peak)	3.4¢/kWh	5.2¢/kWh
8 a.m. - 10 p.m. Sat. (inter-peak)	3.2	4.7
All other times (off peak)	2.7	3.9
Demand Charge -		
May - Sept.		
on peak	$6.05/kW(2)	$8.35/kW(3)
inter- and off peak	No charge	No charge
Oct. - April		
on peak	$5.15/kW(2)	$7.45/kW(3)
inter- and off peak	No charge	No charge
Average Monthly Electric Bill -		
consumption	$200,000	$250,000
demand	84,000(2)	140,000(3)
Total	$284,000	$390,000
Projected Goal with Strict Conservation -		
consumption		$170,000
demand		80,000
Total per month		$250,000

(1) New rate structure anticipated early 1982.
(2) Based on average of 2 highest demand periods.
(3) Based on single highest demand period.

For billing, demand is based on the average kW usage over a 15 minute interval of high consumption.

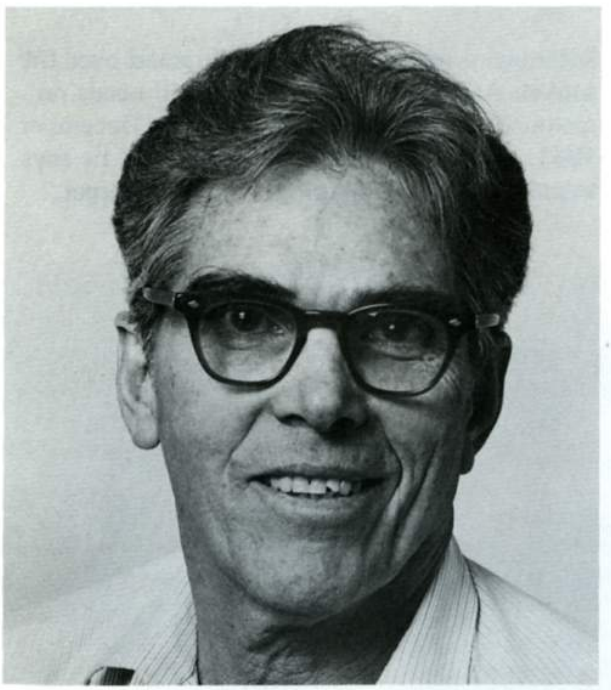
Associate Director and Head, Administrative Department Richard Rossi (right) presented 10-year service awards to (left to right) Carolyn Springer, Gloria Pollitt and Francis Holloway. Approximately 160 awards were presented during the ceremony, held last month in the Gottlieb auditorium.

Bill Walker (left) and Steve Landau of the Vacuum Shop pose with the handmade Christmas decorations they created to add holiday cheer to the shop. Decorations include Christmas tree ornaments,as well as 400 feet of red and green paper chains made by Steve. Numerous sites throughout PPL also sported holiday decorations.

ppl people

"Day Of Infamy" Recalled

Pearl Harbor, Hawaii. Even for those of us who aren't history buffs, those words conjure up dive-bombing planes, exploding ships, and the death and destruction wreaked on that "day of infamy" 40 years ago.



BILL MYCOCK

Those memories are particularly vivid for Bill Mycock, who lived through the attack although his ship, the USS Oklahoma, was sunk by torpedo fire.

Bill, a technical associate in PLT operations, enlisted in the Navy on June 4, 1940. He'd tried to enlist in New York City the previous September. "It was the day Hitler invaded Poland,"Bill recalled, "but the recruiters said my blood pressure was too high!" He ultimately spent almost 20 years in the service, retiring in February 1960 as a Chief Electronics Technician E-4.

In remembering his experience at Pearl Harbor recently, Bill succinctly summed up that fateful morning. "It was hell," he asserts. "It seemed like one big, bad dream. When we went through the harbor after the attack, we just couldn't believe all the damage that had been done."

At the time, Bill was a 21-year-old gunner's mate third class. The Oklahoma was tied up in "Battleship Row" on the shore of Ford Island in Pearl Harbor. A number of other battleships were berthed in front of and behind the Oklahoma; the USS Arizona was moored two berths aft of the Oklahoma.

The December 7, 1941 attack came "like a bolt out of the blue" to Bill, who felt "the entire world was in an upheaval. Talks were even going on in Washington the day the Japanese hit us!" That Sunday morning had dawned "nice and quiet; most of the officers and married men were ashore. I had just finished breakfast, so I brushed my teeth and was back at my locker when we were hit."

The hit came from a torpedo, dropped from a Japanese torpedo bomber. "The call to battle stations came over the PA right away," Bill explained, "but the torpedoes had a straight run at us." The Oklahoma took four hits from torpedoes, causing her to list badly and eventually capsize. Bill recalls traveling a mooring line from the Maryland (berthed beside the Oklahoma) to his ship "hand over hand, with oil fires on the water all around me and explosions everywhere." The Oklahoma was abandoned after the Arizona exploded, sinking after costing 392 of Bill's shipmates their lives.

Once on the Maryland, Bill helped fire the ship's anti-aircraft guns until 2 p.m. At that point, survivors of the attack were shipped to the West Loch ammunition dump for a one-week stay.

"All the time we were at the ammunition dump," Bill remembered, "all I had were the clothes I had on, which were a tee-shirt and shorts. We had to wear what we had until the Marines managed to get some clothes to give us."

Survivors then moved on to the Pearl Harbor receiving station, where some were transferred to the destroyer tender USS Dobin. Bill's ultimate destination was the destroyer USS Worden, which he joined shortly after Christmas.

Although the attack took a devastating toll, Bill believes the losses would have been far greater had the attack occurred in the open sea. "If that happened," he contends, "a lot more sailors would've gone down with their ships."

Approximately one year later, the Oklahoma was raised from the harbor bottom. The two fountain pens and the wallet he'd had in his locker Dec. 7 were returned to Bill, who has kept the coin and paper money the wallet contained. The Oklahoma was sold for scrap, but sank on her way back to the United States.

While serving on the Worden, Bill participated in the battles of Coral Sea and Midway, as well as in the invasion of the Solomon Islands and the battle of the Eastern Solomons. The Worden sank after striking a reef at Amchitka Island in the Aleutians, where she was landing Army scouts prior to landing troops. The frightening thing about that January 12, 1943 incident, according to Bill, was that the ship sank in water with a temperature of 38°F and a surrounding air temperature of 32° F. Prior to that trip, Bill reports, "I spent a lot of money to buy a set of tailor-made "blues". They were lost when the ship went down."

Although a memorial has been erected over the sunken Arizona in Pearl Harbor, Bill needs no memorial of that Sunday morning in December 1941. "It's embedded in my memory," he says solemnly. "It's something I'll never forget."

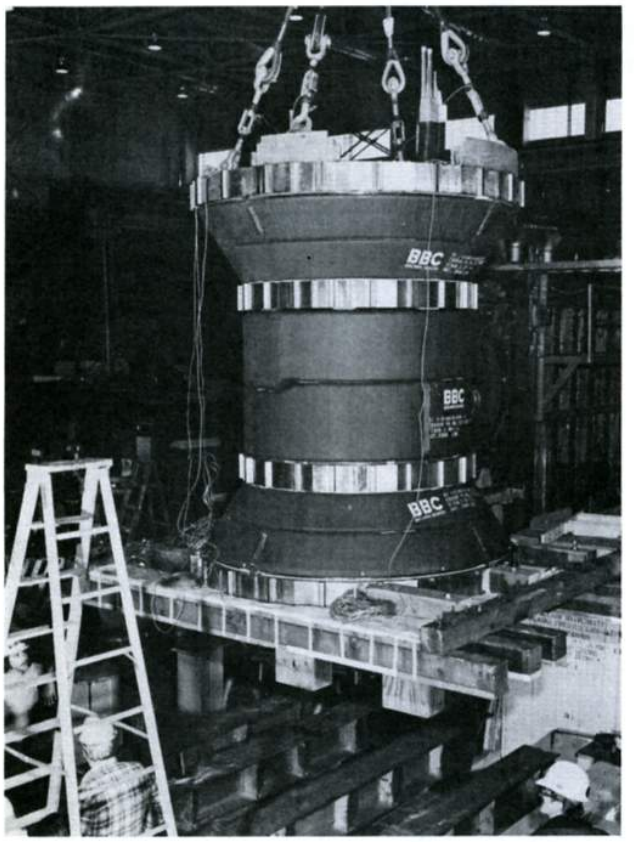
The remains of Bill's wallet, the coins and folding money it contained, and two fountain pens were returned to him after the sunken USS Oklahoma was raised from the bottom of Pearl Harbor. A picture of Bill during his service days is included at the right.

HOTLINE
PRINCETON PLASMA PHYSICS LABORATORY
Vol. 3 No. 7 February 22, 1982

ISS/PF Subassembly Readied for Move

Electrical testing of the inner support structure/poloidal field coil subassembly is underway in the 1-H Building on A-Site. The unit, which will form the "hole" in TFTR's tokamak "doughnut", is expected to be moved to the C-Site test cell by the end of February.

The ISS/PF coil subassembly was delivered to PPL January 27 from the Brown Boveri Corporation's North Brunswick facility, where it underwent final assembly and preliminary testing. The 56,000 pound unit is comprised of the inner support structure, two pairs of ohmic heating coils, and a pair of equilibrium field coils. The ISS was fabricated by Rockwell International's North American Aircraft Operations; the coils were manufactured by Brown Boveri in Zurich, Switzerland.



The overhead crane was used to unload the ISS/PF coil subassembly at the 1-H Building, where the unit is undergoing electrical testing.

The ISS resembles a spool with its cylindrical section bisected by two rings. It consists of four subassemblies, separated by dielectric to reduce eddy currents. It is designed to resist the magnetic centering and overturning forces the poloidal field coils will exert while TFTR operates.

Three pairs of coils were installed around the ISS central column at Brown Boveri. Coils are separated from the ISS by rubber cushions covered with stainless steel. Pillow shims are inserted between each coil, then inflated with epoxy to provide a snug fit for all components and prevent movement during tokamak operation. Studs running from top to bottom of the assembly have been hydraulically tensioned to prevent separation of the horizontal joints during operation.

Strain gauges, which will monitor the behavior of the ISS while TFTR is operating, have been installed by Graham Brown's Material Testing Lab staff. Conditioned signals from the gauges will be transmitted to the control room by CICADA. It is expected that these signals will be used in the determination of test parameters.

Later this month, the ISS will be moved from the 1-H Building to the test cell. The unit will be placed on a latticed framework, allowing workmen access to the bottom of the assembly. It will remain on the framework while lower lead stems are being spliced onto it.

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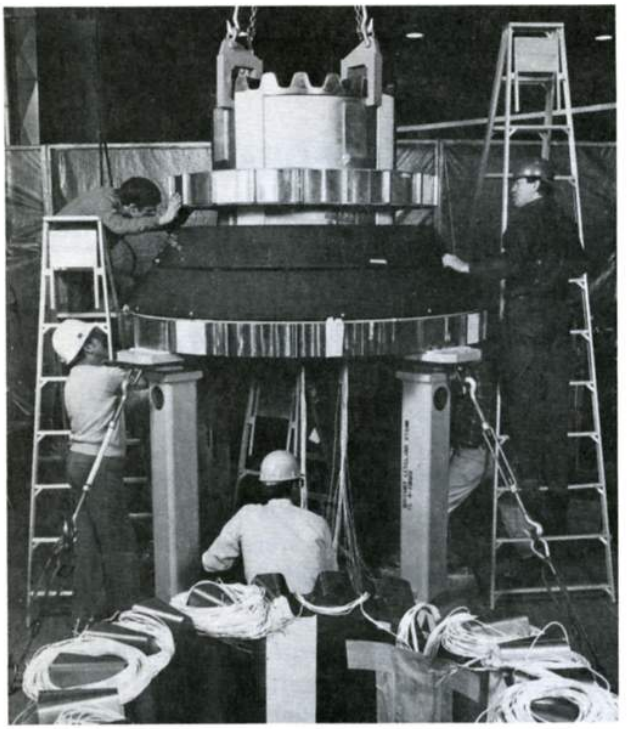
The unit is expected to be installed at the center of the TFTR baseplate in April.



Workmen install the lower inner ring of the ISS/PF coil sub-assembly onto the lower outer ring of the unit. Stack two coils (already in place) can be seen in the background, and the coiled leads from numerous strain gauges are visible in the foreground.

New "Fellow"

Dr. Mary Shoaf, assistant director of PPL, was elected a Fellow of the American Association for the Advancement of Science (AAAS) during the group's annual meeting in Washington January 7.

A Fellow of the AAAS is described as "a member whose efforts on behalf of the advancement of science or its applications are scientifically or socially distinguished."

Dr. Shoaf said she'd received "thumping satisfaction" from her new fellowship status, adding that "It's gratifying to get the recognition of the scientific community for the work you've done."

Fellowship status is an honor conferred by the AAAS on selected members. Individuals are nominated by committees of the Association's disciplinary sections, the executive officer, or by three other Fellows of the Association. The nominations are then presented to the Council of the AAAS for election.

Dr. Shoaf is a long-standing member of the AAAS. She received her Ph. D. from Purdue University in 1960, and joined the laboratory staff three years ago.

Dr. Mary Shoaf

Cafeteria Changeover

If first week figures are any indication, lunchers at C-Site have given a rousing welcome to Interstate United, the new cafeteria services vendor.

Cafeteria manager Buddy Macrie characterized his first week at PPL as having gone "extremely well". We really have had a great turnout, and a nice response. Our first week was our busiest, and our daily deli special has been doing excellently. People are becoming more conscientious about what they spend their money on, and we're trying to provide something for everyone's pocketbook."

The firm began their operations at C-Site January 25, introducing a daily deli sandwich special served with potato chips, a pickle, and potato salad. The deli special will be continued, as will the home-made soups, the daily choice from two hot entrees, and the grill specials. The salad-bar-by-the-ounce has also worked out well, according to Buddy, who added that the 12 items on the bar will be varied daily.

(continued)

Cafeteria

Buddy Macrie

In the future, PPL personnel will be treated to various ethnic lunches (such as Italian Day, Mexican Day, Hungarian Day and so on). "Buddyburgers", the equivalent of a Big Mac, may also be making an appearance on the menu.

An impromptu "picnic" has already been planned for the summer months, complete with a hotdog wagon and a popcorn machine. Buddy's band, the Separations, will play in the cafeteria courtyard throughout the lunch hour. Additional events will be scheduled throughout the year.

Earlybirds visiting the cafeteria for breakfast will also find changes. A daily breakfast special, featuring a variety of breakfast treats throughout the month, are available.

Buddy recommended that anyone who has a favorite food they'd like to see on the cafeteria menu call or write the cafeteria with the suggestion.

Jean Cawley, district manager for Interstate United pointed out that the firm replaced all the china and silverware in the cafeteria when they took over. "Loss has been a very big problem here in the past," she said, "and we'd like to keep spending our money on food, not on replacing utensils."

Jean asked that cafeteria users who take food back to their offices request special takeout platters. The styrofoam trays feature a lid that encloses the entire plate, keeping food warm in transit. Pies are also available in plastic containers for take-out.

The cafeteria has the capability to cater meetings, dinners or Christmas trays. Those interested in these services should contact Buddy for more information.

Interstate United has also installed a bank of new vending machines at C-Site. A sandwich machine and a condiment stand complete the area.

One of the changes in the vending machines is the soda machine, which now dispenses soft drinks by the cup rather than by the can. Jean explained that using cup soda has reduced the price from 35 cents per can to 25 cents per cup, while maintaining the same amount of soda. Non-spill lids for soda and coffee cups are located in a rack attached to the soda machine.

Buddy and Jean both expressed their thanks to the cafeteria workers, Maintenance and Security for helping smooth the transition between vendors. They also praised their clientele, characterizing them as "helpful and very friendly. People have called up up and told us what a good job we're doing, and we appreciate that. It helps us keep our morale up!"

Plot Program

Plowing of PPL's garden plots in preparation for another season of growing is scheduled for the near future. Before plowing can be done, however, past gardeners must clean out their plots.

Employees who used a garden plot last year are asked to remove all stakes, sticks, screening or fencing from their plots as soon as possible. Details on this year's garden plot program will be published in upcoming editions of the HOTLINE.

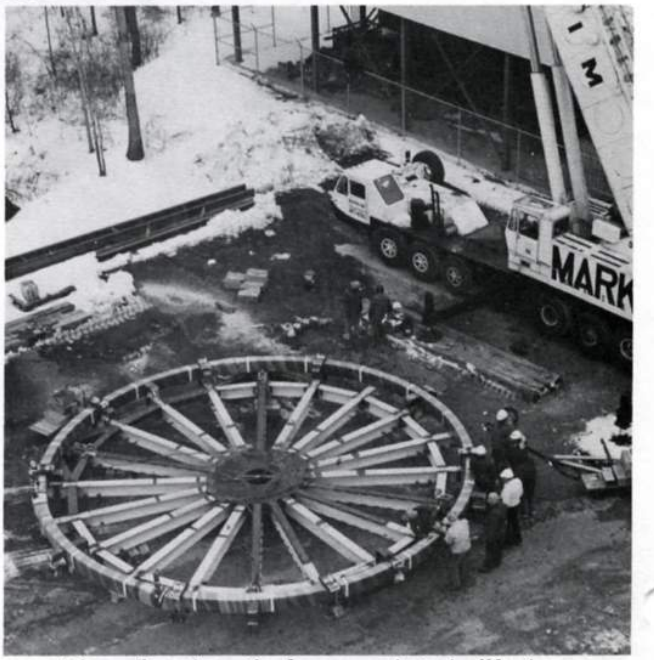
A workman welds support blocks onto the lifting frame holding coil stack number nine. The blocks allow the frame to be tilted while holding the coil securely in place, preventing damage.

Coil Montage

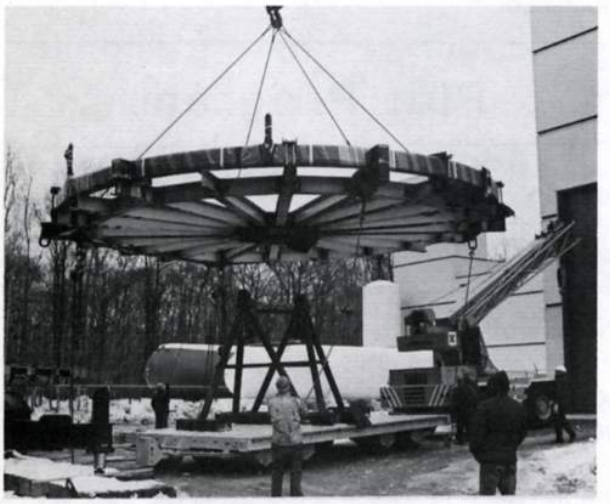
Coil stack number nine, the most massive coil assembly ever produced by the PPL Coil Shop, made its journey from the 1-K Coil Shop to the TFTR test cell January 25. There it joined two other lower poloidal coil system stacks, manufactured at PPL and already delivered.

The stack, which contains equilibrium, ohmic heating and variable correction coils, was mated to a transport fixture prior to its trip across campus. It had to be turned upside down upon arrival at the test cell, so that coil leads would extend into the basement of the building. There, ten foot long conductors will be brazed onto the coil leads and connected to basement buswork.

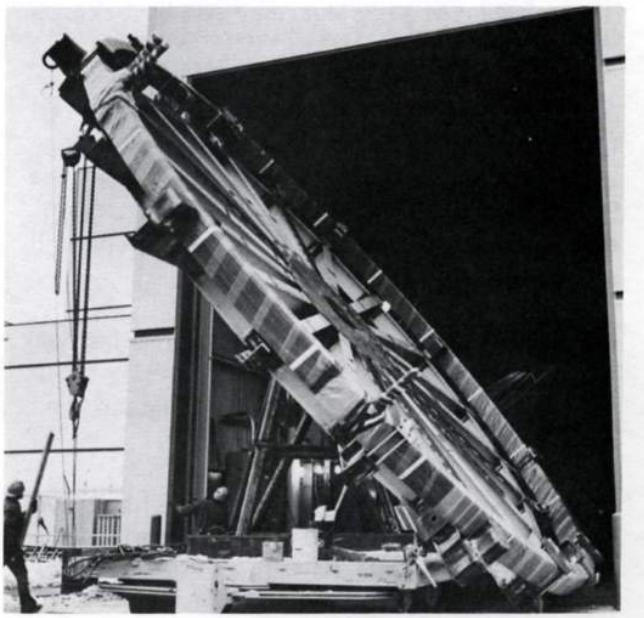
Although our photo montage documents the move of stack nine, the procedure used for all lower coils is similar.



The coil stack on the frame, ready to be lifted.

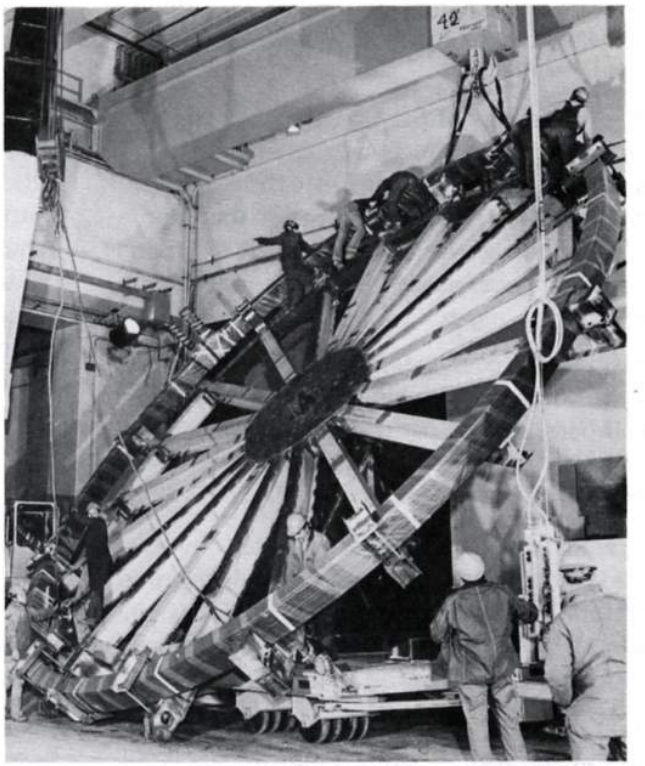


The coil and frame assembly are placed onto a pivoting fixture, mounted on a flatbed truck, to be taken into the TFTR test cell. The total weight involved in this lift is approximately 61,000 pounds.

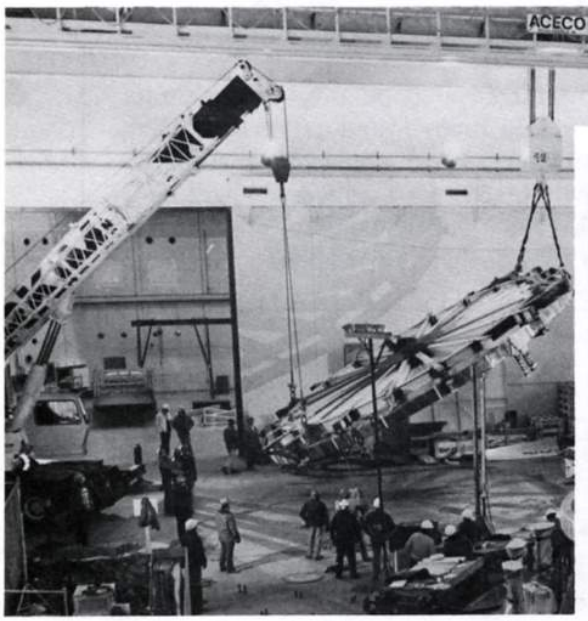


The coil stack, which weighs approximately 12 tons and has a 33 foot outer diameter, had to be tilted on its side in order to pass through the outer door of the TFTR Mockup Building.

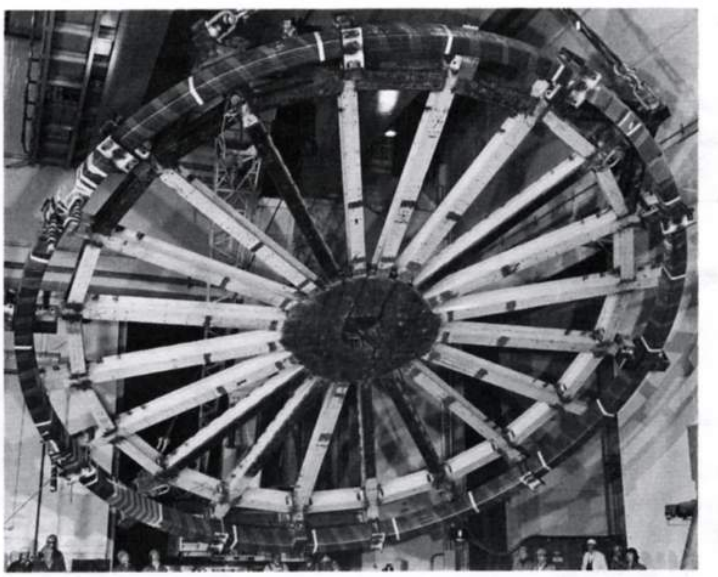
Despite the rather tight fit, the coil was safely moved through a second doorway connecting the mockup area with the test cell.



Workmen scaled the lifting frame in order to attach the coil to the test cell's 110-ton capacity overhead crane.



Once attached to the overhead crane, a second crane was needed to help flip the massive coil stack over.



The upside-down coil dwarfs the workers it is suspended over. It was eventually placed on a storage frame to await installation on the TFTR baseplate.

Recycling Begins

February 22 marks George Washington's birthday and the beginning of PPL's new waste paper recycling program.

PPL is the first sector of the University to begin such a recycling program. Recyclable paper constitutes approximately 43 percent of PPL office waste material. It has been estimated that the laboratory could recover approximately $70 per ton of recycled paper, which would be returned to PPL's operating budget.

In addition to the cost benefit, recycling paper uses 60 percent less energy, saving approximately two and a half barrels of oil per ton of paper produced. Recycling also helps conserve space for other waste materials in landfills.

Folders, which should be kept on the desk for saving white office waste paper, have been distributed to laboratory employees. Used white paper, which includes letterhead, copier paper, notepad paper, and so on, is stored flat in the folder.

When full, employees will empty their folders into bins located throughout the laboratory. Bins will be emptied periodically by the building maintenance staff, who will pack the paper into bundles for transportation to the recycling center.

Recycled paper must be stored flat, not crumpled, for ease of handling. The present program includes only white office paper, not newspapers or magazines.

Any questions concerning the program should be directed to your supervisor or to Maintenance, ext. 3595.

Travel Tips

A Princeton University ID card can do more than most travelers might think. That little card can be a ticket to reduced hotel rates when traveling on laboratory business.

Travel Services has corporate rate and guaranteed rate agreements with a number of hotels. Corporate rate rate covers a special room rate, not available to the general public. A guaranteed rate means the quoted room rate is the maximum that will be charged, even if accommodations are usually sold at a higher rate.

Corporate rate agreements currently exist between Travel Services and the Holiday Inn, Quality Inn, and Howard Johnson hotel chains. Corporate rate discounts are available from the Travelodge chain, and the Sheraton, Marriott, Hyatt and Hilton hotel chains provide government or faculty rates. Smaller hotels nationwide that are not members of a hotel chain often will provide government discounts for laboratory travelers.

In cases where two discount room rates are available, Travel Services will request the lower rate. Travelers should verify the specified rate at the time of checkin, and they may be asked to show their University ID or a special hotel ID card.

For further information on discount accomodations when traveling, contact Travel Services, ext. 2657.

Cafeteria Note

Due to the increased popularity of the C-Site cafeteria, crowded conditions often exist on the cafeteria line at noon. Employees are asked to stagger their lunch hours between 11:30 a.m. (when the cafeteria opens) and 1:30 p.m. (when it closes) to help alleviate the problem.

Training Program

For eight hours every week, ten members of the PPL Plant Engineering section learn new skills or sharpen old ones by attending an in-house educational program developed by TPC Training Systems of Barrington, Illinois. Classes meet Monday through Thursday from 8 to 10 a.m.

The training program has been in operation for several years, and is open to any laboratory

(continued)

employee. Students in the program, which is fully paid for by PPL, receive permission to spend four hours per week of laboratory time in class. It is required that an additional two hours per week be spent in home study.

The courses currently being offered include Maintenance Fundamentals, Mechanical Maintenance, Electrical Maintenance, and Maintenance Shop Practices. Future courses will include Air Conditioning, Maintenance Welding, Boiler Operation and Refrigeration Maintenance.

Each course consists of 10 distinct units. Since lessons are self-taught under supervision, each student can work at his or her own pace. Students test themselves before beginning each course, and are also tested after each course unit. Completion certificates are awarded at the end of each course, which takes an average of 33 weeks to finish.

Students enrolled in the current training program include Michael Suydam, John Kish, Jack Thompson, Michael Burgess, Larry Berry, Steve Wilson, Kirk Garvin, Richard McDonough, Jules Nemeth and John Sadovy.

Jules Nemeth (right) takes a chapter test while Rich McDonough (left) continues his reading during an in-house training program class. Students work at their own pace in the courses, which offer individualized instruction in a number of fields.

According to Tom Hurley, training instructor for the program, "response has been very good. This session has been running since September, and the first group of participants is now about halfway through their courses. Inquiries have been coming in from many other shop employees who would like to be enrolled in future classes. We want people to know the courses are available, and that the training will benefit the individual as well as the laboratory."

Anyone interested in more information on the training program should contact Tom at ext. 3107. Supervisor approval is required prior to enrolling in the program.

Committee Elected

Don Hay was named chairman of the Advisory Committee for the Princeton University Plasma Physics Laboratory Engineering and Scientific Staff during elections held January 14. Dan Huttar, Larry Michaels, Charlie Staloff, Marilee Thompson and Phil Thompson were all chosen for one-year terms on the committee.

The major functions of the Advisory Committee include:

Communications with Staff members, as well as between the Staff and other components of the laboratory and the University at large, particularly regarding policies concerning all aspects of the Staff's conditions of employment.

Communications with the laboratory Director and Laboratory Council about issues of concern to the Staff as deemed appropriate.

Supervision of the election of Staff representatives to laboratory and University groups and committees which do not have established election procedures.

Members of the Engineering and Scientific Staff are encouraged to bring matters which affect this group to the attention of any member of the advisory committee. The committee will assess the significance and nature of the concern. Those items found to be worthy and of interest to the staff in general will be brought to the attention of the appropriate management element. The committee also reviews proposed policy and helps management obtain a preview of employee reaction to proposed policy changes.

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 Information Services, Module 2, C-Site, James Forrestal Campus, ext. 2754.

Award Winner

Ellie Weed

PPL Sub-Contractor Administrator Mrs. Eleanore Weed was one of 18 businesswomen honored by the Raritan Valley Chambers of Commerce during their annual awards dinner for "Women in Business and Industry."

Mrs. Weed, who has been with the University since 1964, received an appreciation award from the group. The award cites her "significant contributions to the Raritan Valley business community." She said the award "came as a suprise, and a delightful one."

Ellie has been associated with the Princeton Education Center at Blairstown for seven years, serving as fundraiser for the organization. She has been ticket co-chairman for the Blairstown Potpourri since 1975, and has also been active in fundraising efforts for St. Augustine's Church and the Consolata Fathers mission.

A member of the National Contract Management Association, Ellie operated her own real estate office from 1954 through 1957. She was the first woman to become an associate member of the Society of Residential Appraisers of New York, Chapter 3.

She received a citation from President Harry Truman for her volunteer work with veterans at Valley Forge General Hospital during World War II. She also served as vice chairperson of blood donors for the Paoli Branch, Southeastern Chapter of the American Red Cross during the war years.

Safety Stickers

In order to comply with laboratory safety requirements, every telephone should have an emergency sticker on it. To obtain a sticker, call Marjorie Barnett at ext. 2694.

Bicycling Survey

Attention all bicyclists! Do you ride on West Windsor roads to get to PPL? If you do, the West Windsor Pedestrian and Bicycle Access Committee wants to hear from you.

Where do you start from, and what West Windsor roads do you use? Why have you chosen your particular route? Are there any dangers on the roads you ride? Are there roads you'd like to ride but don't because you feel they are unsafe?

Please send the answers to these question, along with any other comments or suggestions regarding bicycling on West Windsor roadways, to Carol Silvester, PDX.

Health Insurance Review

If you or your spouse will soon celebrate a 65th birthday, the time has come to review your health insurance coverage.

As most of you are aware, at age 65 Medicare becomes your primary funding source for medical expenses. As a Medicare recipient you are no longer eligible to receive benefits from Blue Cross/Blue Shield. However, New Jersey Blue Cross/Blue Shield does offer supplemental coverage at substantially reduced rates. This coverage is termed "Medicare Carve-Out".

(continued)

To enroll for "Carve-Out", you will receive notification from the Personnel Office, Benefits Section approximately three months prior to your 65th birthday. Anyone who is eligible and has not been notified, please call Eleanor Schmitt on ext. 2046.

Test Probe Shock Hazard

Users of portable electrical instruments, such as Simpson and Triplett multimeters, are advised to inspect the test probes supplied with such instruments to insure that they are safe to use with hazardous voltages. A defect and possible shock hazard has been found in probes of inferior design, which have been furnished with recently purchased instruments. The hazard arises because plastic insulation over the probe conductor tends to split, exposing the conductor in the probe.

Users of the Simpson Model 260 multimeter and similar instruments should refer to their manuals for safe operating instructions.

Safety  Glasses

A revised schedule for laboratory visits from the Fend-All Company optician, as part of the laboratory's safety glasses program, has been issued. The representative will be at PPL on February 9, March 9, April 6, May 4, June 1, July 13, August 10, September 7, October 5, November 2 and December 14.

Anyone interested in further information on the safety glasses program should contact Dick Carlese at Health and Safety, ext. 2533.

Retirement Benefits

Although you've retired from the University, your University medical benefits will keep working for you.

If you have worked for the University for at least 10 years and are at least age 55, you may retire from the University. If you retire at age 62 or later, the medical coverage you have at the time of retirement will continue free of charge for the rest of your life. For example, if you have Blue Cross/Blue Shield on yourself and your spouse (regardless of whether you had paid all or part of the coverage), at age 62 the Blue Cross/Blue Shield and Major Medical will continue free of charge for both of you for the rest of your lives.

If you retire before age 62, you may continue your Blue Cross/Blue Shield coverage by paying for it until age 62—at which time the University will pay for the coverage. Even if you retire before age 62, Major Medical will continue to be free of charge for you and your eligible dependents throughout your retirement years.

Life insurance coverage ceases 31 days after retirement. If you wish, you may convert the value of your group life insurance policy to an individual policy when you retire by contacting a local Prudential Insurance Company office.

Requests for continued use of University identification cards and the benefits associated with the cards should be directed to Rebecca Goodman, Administrative Services, in New South Building on main campus.

For further information on retirement benefits, contact Len Thomas in Personnel, Sayre Hall, ext. 2052.

Sewing Group

Those interested in sewing, or in learning new sewing techniques, now have the opportunity to do so via the Princeton University League's new sewing group.

The group meets each Wednesday from noon to 2 p.m. in the Dorothy Brown Room of the league office, 171 Broadmead. It is open to people of all sewing abilities, and will frequently feature guest experts giving demonstrations of specific sewing skills.

This is just one of the many league-sponsored daytime and evening interest groups, which include groups for bridge, gardening and piano. For more information about the groups, call the league office at 452-3650.

LLN Superconducting Magnet Sucessfully Tested

The first of two sets of superconducting "Yin-Yang" magnets for the Mirror Fusion Test Facility (MFTF-B) passed initial operational tests at Lawrence Livermore National Laboratory on February 4. The magnet met its full design operating current of 5,777 amperes. The maximum magnetic fields produced were as predicted: 77,000 gauss at the conductor, over 40,000 gauss at the edge of the magnetic mirror, and 20,000 gauss at its center.

The two C-shaped interlocked coils contain over 31 miles of windings. The coils are immersed in liquid helium at a temperature of 4.5° Kelvin (about 452° below zero Farenheit) to all but eliminate conductor electrical resistance. The magnet system consumes only 1,300 watts of electrical energy during operation; 100 watts are used by the magnet itself, and 1,200 watts are required by the electrical leads.

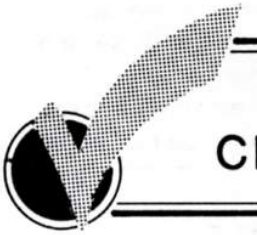
The stresses and strains on the magnet structure were also as predicted—up to 80,000 pounds per square inch—and well within the limits of the materials holding the magnets in place.

The Yin-Yang magnet with its support rods weighs 789,000 pounds, stands 25 feet high, and hangs inside the 36-foot diameter, 60-foot long MFTF vacuum vessel. Each coil is encased in 304 LN stainless steel up to 5 inches thick to withstand the exceptionally high magnetic forces. Fabrication of the superconductor using niobium-titanium filaments in a copper matrix is the result of several years of development at LLNL.

MFTF-B is expected to begin operating in late 1985.

ArtExhibit

An exhibit of artworks by Catherine Louis will be on display in the Dorothy Brown Room of the Princeton University League from February 21 through March 19. The league offices are located at 171 Broadmead, and are open from 9 a.m. to 1 p.m. Monday through Friday.



Security Checkpoints

(This is the second of three installments, outlining security tips for PPL employees) While at home:

- Safeguard your personal property (TV, stereo, typewriter) by engraving your driver's license on it.
- If an intruder gains entry to your home, *Don't Confront Him*—call the police.
- Have a peep hole installed in solid doors, and check all visitors before opening the door.
- Inventory your home with photographs.
- Consider installing a security alarm system if you live in a secluded area, or have an unusual amount of valuable property.
- If you get an unusual number of suspicious wrong number calls or "empty line" calls, notify the police.
- Locks are no good unless you use them. While in the backyard or at a neighbor's, a burglar could enter your home; it only takes a minute!
- Watch while having extra keys made, and wait for the keys.
- Be alert in protecting your neighbor's homes as well as your own.
- If you see or hear a prowler, *Call The Police.*
- Don't tell a stranger that a neighbor is away.
- Women living alone should list only their last name and initials on mailboxes and in telephone directories.
- Write down license plate numbers of suspicious vehicles.
- In the event of a death in the family, do not leave your home unattended.
- If a thief has to make noise to enter your home, he won't take the risk. Make it difficult for him!

HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

Vol. 3, No. 8 March 1, 1982

January Energy Conservation Report

Thanks to a dedicated effort and interdepartmental employee cooperation, PPL has succeeded in conserving approximately $170,000 in fuel oil and electricity costs thus far this fiscal year.

The Energy Management Administrative Committee, in conjunction with the Electric Power Subcommittee, had set a goal of holding PPL electrical energy costs to $239,000 for January 1982. Fuel oil costs were to be reduced to $93,736 for the same period.

Actual figures for the month show costs of $192,882 for electricity and $83,140 for heating fuel oil, amounting to a total energy savings of $56,714 for January FY82. These reductions in overall energy consumption were achieved despite the additional electrical power and heating oil required for the large general high-bay areas involved in TFTR activities.

The committees reported that of the $170,000 year-to-date savings, approximately $125,500 constituted electrical savings and $44,500 were fuel oil savings. Higher oil savings could have been achieved; however, abnormally cold weather during the heating season prohibited any further fuel oil cutback.

It is interesting to note that the overall TFTR test building area increased PPL space operations responsibility by approximately 28.6% in FY82. Last year, when TFTR activities were basically construction only and energy needs were considerably less, the electric bill was held constant during January.

The committee pointed out that electrical utility rates have risen significantly as of February 15, 1982. The rate increase granted to PSE&G will have a considerable impact on the cost of electric energy to PPL. There is therefore a need for greater effort by all PPL personnel to "Be Energy Waste Conscious", and to help conserve in all areas of the laboratory. For example, office lights should be turned off at lunch time, or whenever an individual is out of their office for more than 10 minutes.

The committees, as well as the PPL Council, ask that all energy waste situations be reported to Plant Maintenance and Operations, ext. 3092, for further follow-up. Everyone's help and cooperation is needed to preserve limited laboratory funds.

False Alarms

Employees leaving the laboratory after working hours are creating problems for the Security Department. Various outside access doors are alarmed after hours, and when employees leave via these doors, an alarm is sounded. A Security officer must then be dispatched to investigate what usually turns out to be a false alarm.

The Security Department has asked that employees working after hours call Security at ext. 2536 prior to leaving by an alarmed door. That short telephone call will help conserve manpower that could be needed elsewhere in the laboratory.

Singles Social

The Princeton University League's monthly singles wine and cheese social will be held March 11 at 5 p.m. in the Fine Tower faculty room on main campus. All single members of the University faculty and staff are invited to attend. For further information, contact Naoma Dorety at 272-4097.

Security Checkpoints

(This is the third of three installments, outlining security tips for PPL employees)

While at the office:

- Make a record of the serial numbers of both University and personal property in your office.

- Never loan keys or equipment to strangers or unknown workmen. Don't be embarassed to request proper identification.

- Personal property, such as purses or briefcases, should never be left unattended. Keep them, as well as petty cash and coffee funds, under lock and key.

- Make sure your office is locked when unattended, even for a few minutes.

- Do not prop outside entry doors open or admit strangers.

- When leaving for home, lock desk and file cabinets. Don't leave combinations in unlocked drawers.

- Make sure your car is locked with no valuables in plain view, even when parking in a well-lighted lot.

- Return to your car by way of well-lighted, well-traveled walkways. Use the "buddy system" when possible.

- If you must remain in your office after closing time, attempt to have someone stay with you.

- Notify Security of any suspicious persons or activities.

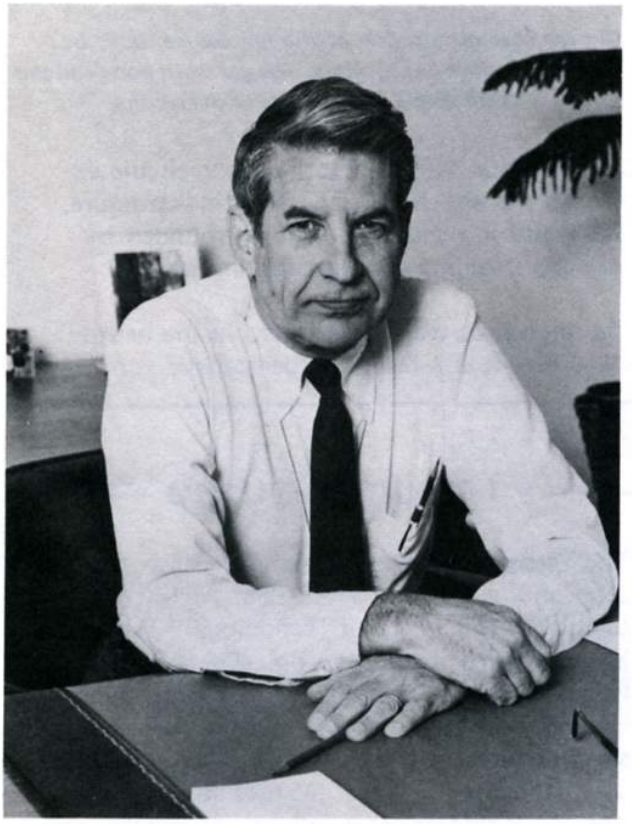
Manager of Human Resources Len Thomas explains the finer points of PPL's new personnel policy to a group of supervisors meeting in Sayre Hall. The Personnel Department held meetings with all laboratory supervisors to familiarize them with the use of the new policy manual.

HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

Vol. 3, No. 9 March 19, 1982

New Associate Director Joins Lab



James W. Clark

James W. Clark of Princeton joined PPL March 8 as Associate Director, filling a newly created laboratory post.

Prior to coming to PPL, Mr. Clark worked for the Chase-Manhattan Bank in New York City, where he initially served as Director of Strategic Planning at the corporate level for four years. He then worked with the bank's Monetary Missions Team, whose responsibilities included devising financial and marketing strategies toward the OPEC nations. Most recently, he was involved in building a national mortgage banking business for Chase.

Mr. Clark holds a degree in history from Oberlin College, and received his master's degree in public and international affairs from Princeton University's Woodrow Wilson School in 1950.

From 1950 through 1970, he was employed by the Bureau of the Budget (now the Office of Management and Budget) in the Executive Office of the President. During that time, he reviewed the budget of the Atomic Energy Comission, and became acquainted with Project Matterhorn/ Sherwood.

He recalled meeting Lyman Spitzer, Melvin Gottlieb, Tom Stix and "a number of other people" at PPL in the 1950's. He later handled budgets and legislation for the Air Force and the Department of Defense Research and Development programs, as well as international economics, military and intelligence activities.

In recent years, a side-line interest in astronomy has led to two extra-curricular assignments—membership on AURA aura Visiting Committee to Kitt Peak National Obseravatory, and on the Advisory Committee to Princeton's Department of Astronomy and Astrophysics.

The new Associate Director will "assist the Director and others in dealing with management questions, primarily on the non-technical side." He will be involved in external relations among PPL, the government and private industry.

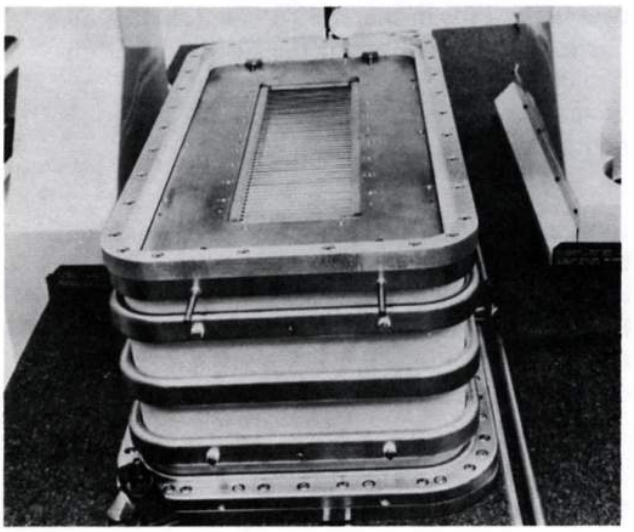
Asked about his goals, he replied that he would like to "work with a fine professional team in making PPL the best-run, scientific organization in the United States.

Ion Source Delivered

The two assemblies that comprise the first TFTR ion source were delivered to PPL last month. The arc chamber, manufactured by Lawrence Berkeley Laboratory, was delivered February 11. The accelerating structure, fabricated by McDonnell-Douglas, arrived Feb. 13.

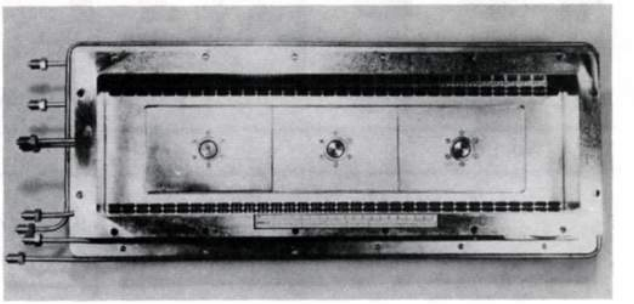
The arc chamber portion of the ion source contains 210 filaments embedded in a copper frame, which serve as a cathode. Three molybdenum plates equipped with gas diffusers function as an anode. Deuterium gas is injected into the chamber, and a 2500-amp current is passed through it, creating a plasma.

Both ions and electrons approach a multiple-slot accelerator, where the electrons are repelled and the ions are accelerated to form a 65 to 70 amp beam. Four separate grids in the accelerator structure, each with a specified individual shape, help accelerate and focus the ion beam into a specific pattern. The grid area measures 10x40 centimeters, and the grids are changed to 120 kV, 100 kV, -3 kV and 0 kV respectively. The charge decelleration prevents electrons in the neutralizer area from being drawn into the accelerator.



The accelerator portion of the ion source, constructed by McDonnell-Douglas, accelerates the ions in the beam prior to neutralization.

The accelerated beam then enters a neutralizer chamber, filled with hydrogen or deuterium gas. A charge exchange occurs, and the beam-ions are neutralized. The beam proceeds past a deflection magnet and an ion dump for further purification before being injected into the TFTR plasma.



The arc chamber portion of the ion source, built by Lawrence Berkeley Laboratory. The gas input ports and the gas diffusers are visible in the center of the picture.

Cooling water will be continuously circulated through the arc chamber accelerating structure. The entire ion source will be surrounded by magnetic shielding and electrical insulation.

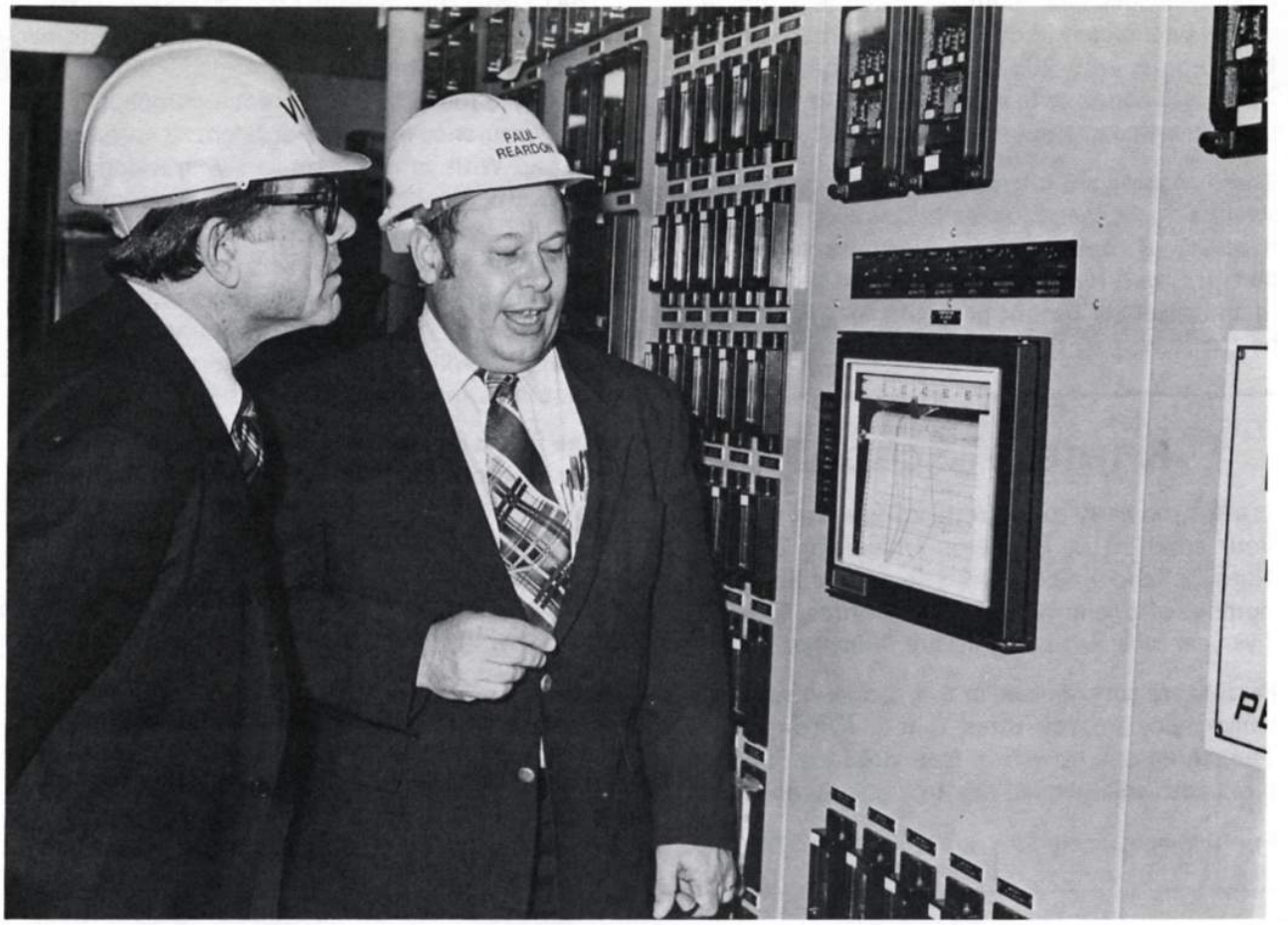
The ion source will first be used in the neutral beam three-source test prior to installation on TFTR.

Tritium Course

The Technology and Research Departments are co-sponsoring a short course entitled "An Introduction to Tritium Handling and Technology". The course is designed to introduce technical personnel at the laboratory to the technology, handling techniques and instrumentation that have been developed for safely working with tritium. The course will be offered in the format of lectures and demonstrations given on two consecutive days, and is planned for April 27–28.

The course will be taught by personnel from the Monsanto Mound Research Facility at Miamisburg, OH. The Mound Facility is the supplier of the Tritium Storage and Delivery System (TSDS) for TFTR. Since 1957, Mound has been one of the primary laboratories for research and development on tritium technology.

Personnel who are interested in taking the course should obtain their supervisor's approval and contact Carl Pierce (ext. 2164) or Fred Dylla (ext. 3199) by March 26, 1982.



Under Secretary Guy W. Fiske (pictured above with Associate Director and Head, Technology Department Paul Reardon) and Director, Office of Energy Research Alvin W. Trivelpiece spent February 19 at PPL, learning about the laboratory's program and projects. Mrs. Fiske and Mrs. Trivelpiece accompanied their husbands to see first hand the work they had read about in The New York Times (January 3, 1982).

Energy Monitors

The Employee Energy Awareness Committee, headed by Ramon Pressburger, is in high gear. The group is conducting various programs within the laboratory to see where all employees can save energy and eliminate waste.

Steve Ragolia, assisted by Paul Jones, is setting up a building and work area monitor program. Fifteen monitors in various laboratory areas have been enlisted thus far. Monitors will seek out waste and distribute warnings when necessary. A warning will be left wherever a wasteful situation (such as leaving office lights on while out) is observed. The monitors will also report any possible energy saving suggestions within their own particular areas to the committee.

So far, Steve has reported splendid cooperation from all those who have been contacted. More monitors in other areas of the laboratory are needed. If you feel you would like to help, contact Steve at ext. 3098.

Benefits Changeover

As of March 1, the PPL Personnel Office has taken on expanded responsibiltiy for the administration of the major employee benefits program for the laboratory. The office had been processing Blue Cross/Blue Shield and Major Medical claims; it has now assumed responsibility for the administration of life insurance, worker's compensation and TIAA/CREF Supplemental Retirement Annuity (SRA) programs.

(continued)

Employee questions about any of these programs should be directed to Mary Bersch (ext. 2043) or Len Thomas (ext. 2052). Eleanor Schmitt (ext. 2046) will continue to assist PPL employees with the processing of their medical claims.

These changes are intended to improve benefit services to PPL employees by eliminating the necessity of traveling to main campus to resolve benefit issues. It is anticipated that administration of all University benefit programs for PPL staff will be transferred to the laboratory within the year.

Nursery School

It's not too early to begin thinking about enrolling your child in the Princeton University League Nursery School next year. There are a limited number of openings available for three, four and five-year-olds, but positions are filling fast.

Parents are contributors in this cooperative school, which holds classes in three, four or five day cycles. The school is in operation from 8:45 a.m. to 11:30 p.m., with an extended day to 1 p.m. as an option.

For further information, call 924-3137 or 921-1129.

Seminar Set

William Davall, a crime prevention officer with the Princeton University Proctor's Office, will be the guest speaker at the Secretarial and Office Support Staff's seminar April 6. Mr. Davall will discuss "Personal Safety—Sexual Assault" in the Gottlieb auditorium from 11:45 a.m. to 12:45 p.m.

The seminar will be repeated in the Sayre Hall auditorium from 11:45 a.m. to 12:45 p.m. April 13. Both sessions of the seminar, organized by the SOSS Seminar Committee, are open to all women on campus.

Travel Tips

A recurring question put to the Travel Office is, "Why won't the University reimburse travelers for the CDW and PAI on car rentals?"

The CDW is the Collision Damage Waiver. A fee is charged (usually $3-6/day) to waive the customer/driver's responsibility to pay the deductible amount (usually $300-600) of the rental company's collision insurance in case of accident or damage to the car. With so many University travelers, the University has decided it is more economical to pay this deductible amount if the need arises than to pay the waiver fee on every vehicle rented. If there should be collision damage to the vehicle while you are traveling on University business, the University will pay up to the insurance deductible amount to the rental company.

The PAI is Personal Accident Insurance. The University carries a travel accident travel insurance policy which provides coverage for employees while traveling on University business. Therefore, to pay the car rental insurance fee would be to duplicate costs and benefits. If you want additional coverage, the expense is yours and is not reimbursable.

Probably the contingency that most rental car drivers are concerned about is liability. Rental car companies must carry liability insurance on all vehicles (just as we in New Jersey must on our personal autos), and this insurance cost is included in the basic rental charge. There are limitations: you must be driving the vehicle "as permitted," and the dollar limits are usually $300,000 per accident, $100,000 per person, and $25,000 per property claim. (This is similar to our personal auto liability insurance, and requirements may vary from state to state.)

So what happens if your are sued individually by an accident victim? If you were driving "as permitted", there is no problem. You are covered by the rental company policy up to the stated limits.

What is "as permitted"? Hertz, a standard for the car rental industry, lists eight uses not permitted (although there might be exceptions; make sure any exceptions are spelled out and written down). Use is prohibited:

(a) to carry persons or property for hire.

(b) to propel or tow any vehicle trailer or other object.

(c) in any race, test or contest.

(d) for any illegal purpose.

(e) to instruct an unlicensed person in the operation of the vehicle.

(continued)

(f) if vehicle is obtained from lessor by fraud or misrepresentation.

(g) to carry persons other than in the passenger compartment of the vehicle.

(h) loading vehicle beyond its rated capacity.

The bottom line is, while traveling on University business, you already are covered for anything the CDW or PAI might cover. Therefore, the University will not reimburse travelers for these charges.

The responsibility for safe driving is completely yours.

ERC Notes

The Employees Representative Committee (ERC) met February 10 in the Theory Conference Room. Kingston Owens of the Benefits Subcommittee, who is investigating the possibility of establishing a basic dental plan at the laboratory, reported on his meeting with a representative of Amerimed, Inc. He will present a report on self-insurance at the March ERC meeting.

Suzen Bayer of the Day Care Subcommittee told the committee that parents of 31 children, ranging from newborns to three-year-olds, would be interested in having a day care center at PPL. She added that a representative of the Mercer Medical Center–Employees Day Care Center would be willing to come and speak with the ERC about starting such a center. A memo on the subject has been sent to the laboratory Administration.

The committee is also looking into starting a surplus materials store. Adequate employee interest in such a program must exist before the ERC can pursue the matter further.

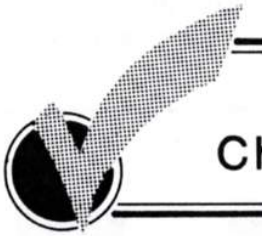
Len Thomas explained that seven courses, which would be taught in conjunction with Mercer County Community College, have been recommended to the Executive Committee for approval. He also mentioned the possibility of holding a rape prevention seminar. The seminar, which would be sponsored by the Secretarial Office Support Staf Staff Committee at the beginning of April, would be held dependent on employee interest.

Gloria Pokrywka took over from Dorothy Mazalewski as the ERC Recording Secretary.

Great Adventure Discounts

Discount tickets for Six Flags Great Adventure are now available from Meg Gilbert in the PPL Personnel Office. The free tickets entitle laboratory employees, their families and friends to discount admissions to the safari and theme park, as well as to reduced rates in hotels near the park. The tickets may be used throughout the 1982 season.

For further information, call Meg at ext. 2036.



Security Checkpoints

Employees are urged to beware of con artists and con games. Some of the schemes used to bilk unsuspecting individuals include:

• Bank Investigator–Banks do not ask anyone to withdraw money in hopes of trapping a dishonest employee.

• Switch Game–Be wary if you are approached by someone who has just come into a large amount of money and wants to share it with you.

• Home Repairmen–Beware of bogus "engineers" who want to check your furnace, chimney or electrical system. Check to see if driveway sealers, roofers, or other repairmen are listed in the telephone book.

• Bogus Salesmen–Beware of someone offering merchandise, particularly color televisions, at ridiculously low prices.

No one ever gets something for nothing. Give yourself time to think, and common sense will help avoid the con game trap.

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 Information Services, Module 2, C-Site, James Forrestal Campus, ext. 2754.

Energy Library

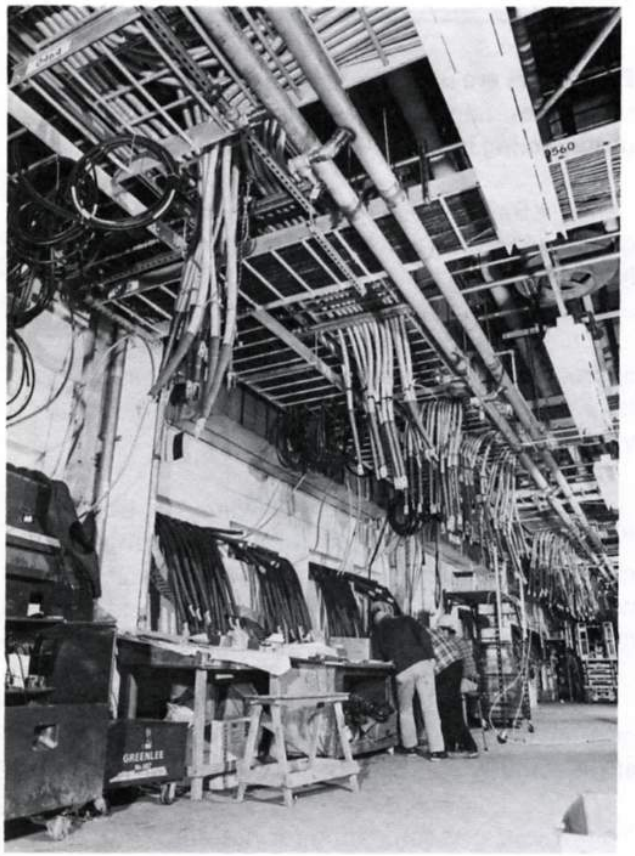
The energy library, which is being maintained for the use of all laboratory personnel, will be temporarily relocated to the 1T2 Building (Transportation Services) at A-Site. Material is available from 8 a.m. to 4 p.m. to any employee of PPL.

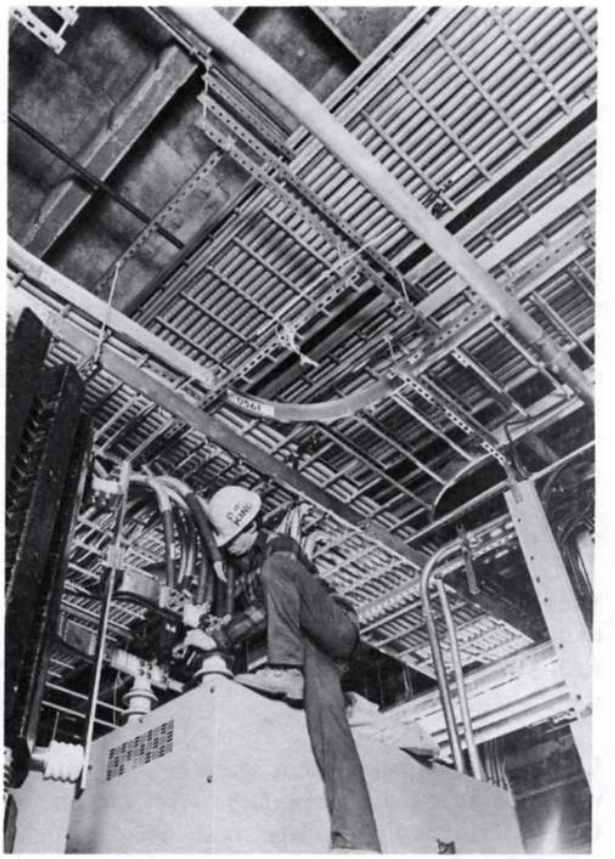
Singles Social

The Princeton University League's monthly singles wine and cheese social will be held April 15 at 5 p.m. in the Fine Tower faculty room on main campus. All single members of the University faculty and staff are invited to attend. For further information, contact Naoma Dorety at 272-4097.

Art Exhibit

A joint art show, featuring the wood sculptures of Gladys Lewis and the weavings of Ann Wennerstrom, will be sponsored by the University League of Princeton from March 21 through April 16. The exhibit will be on display in the Dorothy Brown Room, 171 Broadmead from 9 a.m. to 1 p.m. Monday through Friday.





While TFTR assembly continues apace in the D-Site Test Cell, workmen are also busy preparing the electrical systems that will augment the machine. The myrial cables that will connect the TFTR MG sets with the power conversion units are shown above. The AC and DC terminations from EOH transformers 1 through 9 are shown protruding from the wall in the picture at left; jumper cables connecting transformer to transformer extend from the ceiling. At right, cables linking diodes, interruptors and rectifiers are being connected to a switch gear cubicle. In all, approximately 4,000 cable terminations will have to be connected to allow TFTR to operate.

ppl people

Guitarist Fond of Folk Music

Folk music can open a window on our past, provide a view of our present, and let us peek at the future. Perhaps that's why Jack Mervine derives so much pleasure out of playing and singing folk music with the Princeton Folk Music Society.

Jack has been with the laboratory for six years, and is a software engineer on the Data Aquisition System (DAS) for PLT and PDX.

Jack's guitar was instrumental in his interest in folk music. Orginally a jazz guitarist, he was a member of several jazz bands. Later he took up classical guitar, and belonged to the now defunct Princeton Classical Guitar Society. At PPL he met Mary Corneilussen, who told him about the Princeton Folk Music Society. He's been a member of that group for a year.

The Society, which has approximately 150 members, holds monthly concerts in the Princeton YMCA. Society members also sponsor house sings, informal gatherings for society members only, during which attendees sing songs on a predetermined theme, such as love, or traveling. Jack will be leading a Wild West sing in April.

Sings generally attract 20 to 30 people, and Jack estimated that 20 percent of the attendees are there "just because they like the music; they're not forced into singing."

The Society also hosts house concerts, when a local folk music performer gives an impromptu concert at someone's home. Although the sings are free, a small charge is made for each YMCA concert and house concert. Society members can also be found participating in the various folk festivals held throughout the area.

Jack defines folk music as "music that preserves the tradition of English-speaking countries."

While it's difficult to rein such a wide-ranging field into categories, Jack cited four general groupings in folk music: English and Irish folk songs, rural

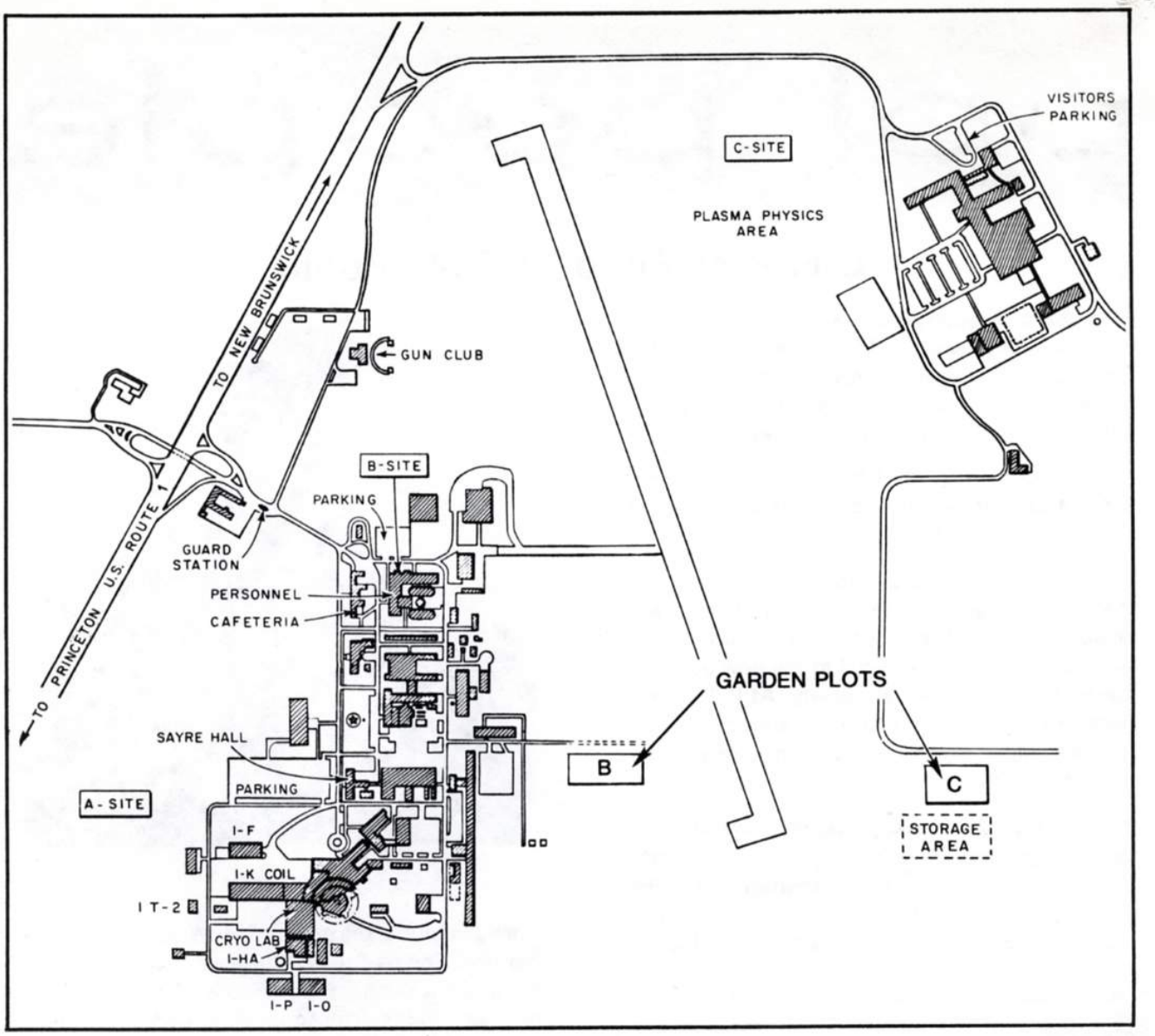
Jack Mervine

American music, the music of the Wild West, and sea chanteys. Some of the performers, such as Gordon Bok and Bill Staines (two of Jack's favorites), write their own music. The songs describe life on the seas, and life in the country.

Many folk performers also play an instrument, such as a guitar, banjo, hammer or mountain dulcimer, violin or recorder. Some, however, prefer to sing without accompaniment.

Yet despite this wide divergence in musical tastes and singing styles—or perhaps because of it—there is a greater tolerance in folk music. One singer will teach his songs to another, and musicians share the arcane chords and tunings folk music often calls for. "It's a community of people who like the same basic type of music as you do," Jack says, "but everyone seems to really enjoy the variety. Sharing good music is a great way of learning."

For more information about the Society, contact Jack at ext. 3420.



Garden Plots

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

Prospective gardeners should complete and submit the form printed here to the Human Resources Section, c/o Meg Gilbert, Sayre Hall. If you have questions, please call Meg on ext. 2036.

GARDEN PLOT REGISTRATION

Name _____

Extension _____ Site _____ Bldg. _____

Lot used last year _____

Newcomer _____

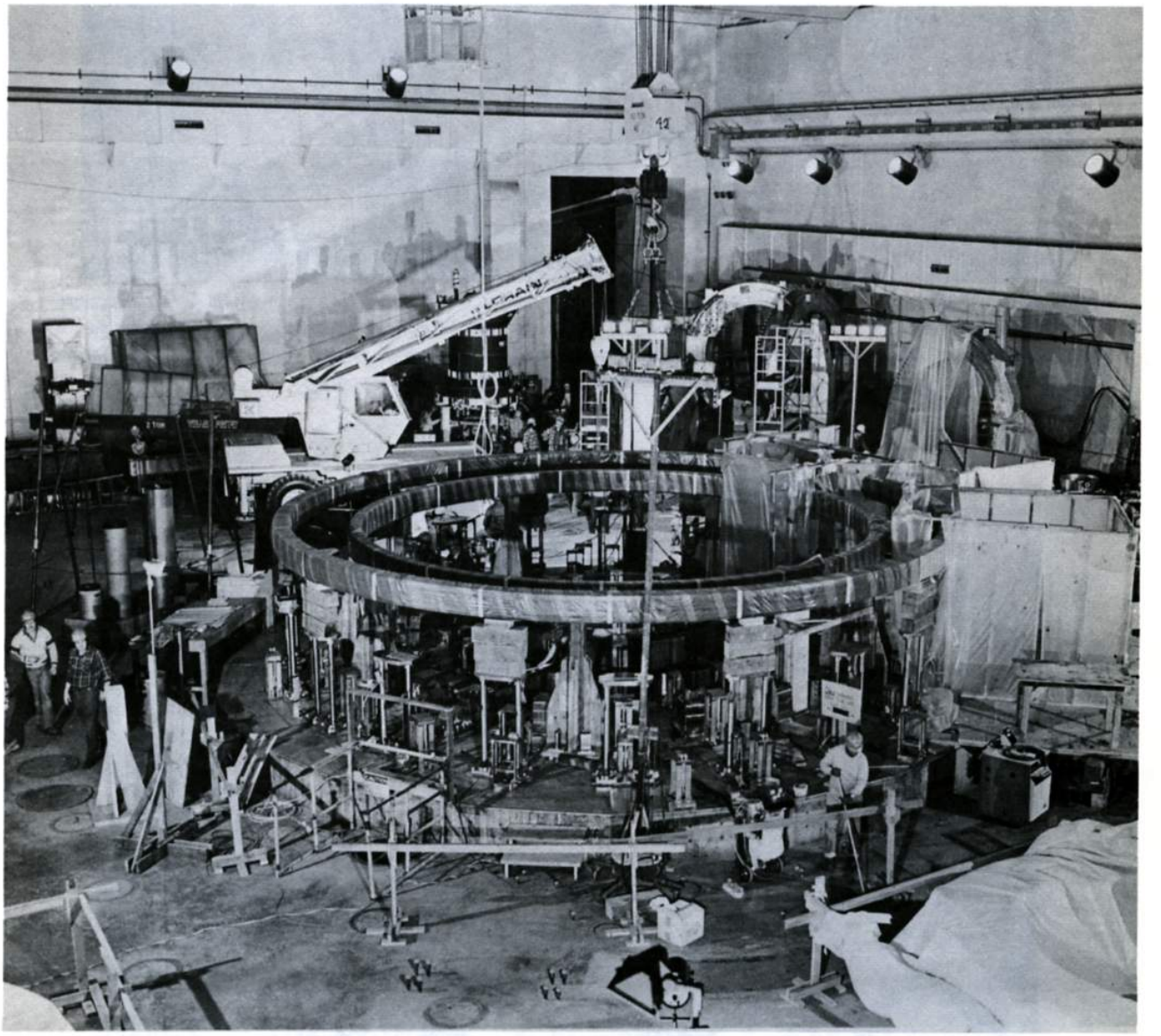
IF YOU USED A GARDEN PLOT LAST YEAR, PLEASE CLEAN IT BY MARCH 31 OR IT WILL NOT BE POSSIBLE TO HAVE IT PLOWED.

HOTLINE

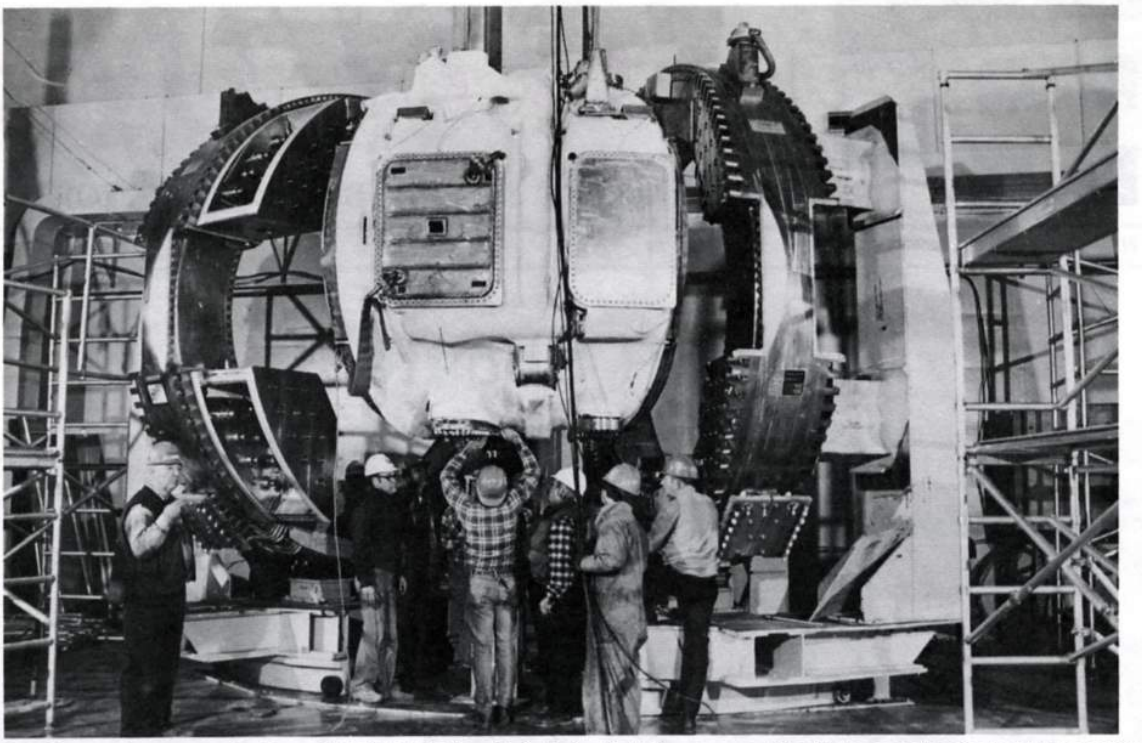
PRINCETON PLASMA PHYSICS LABORATORY

Vol. 3, No. 10 April 8, 1982

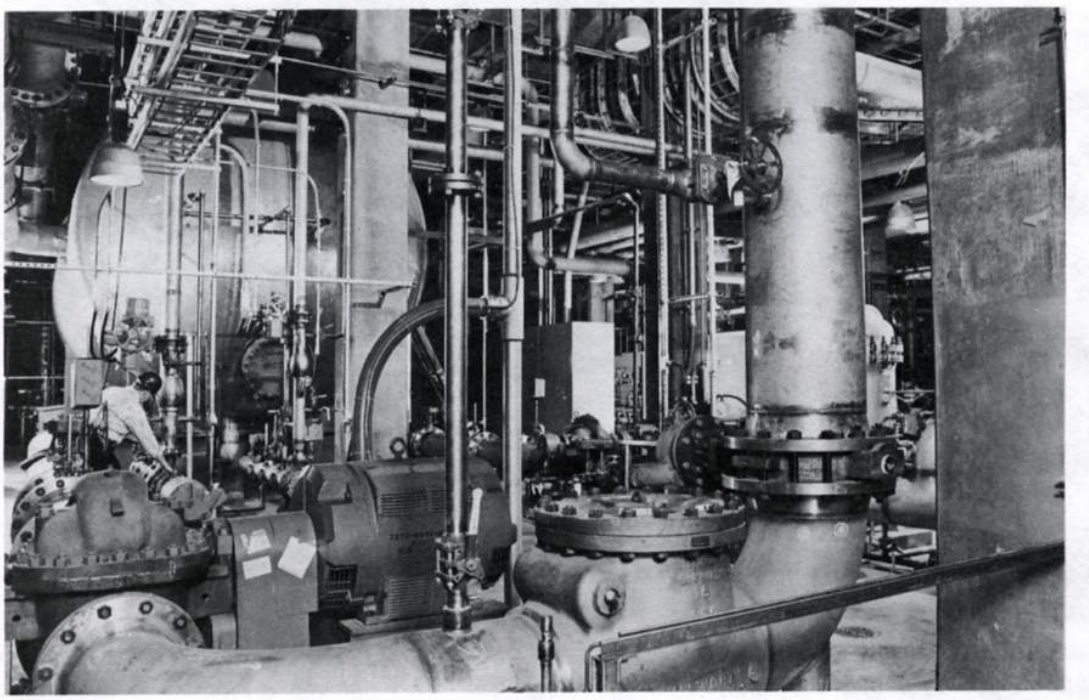
TFTR Update



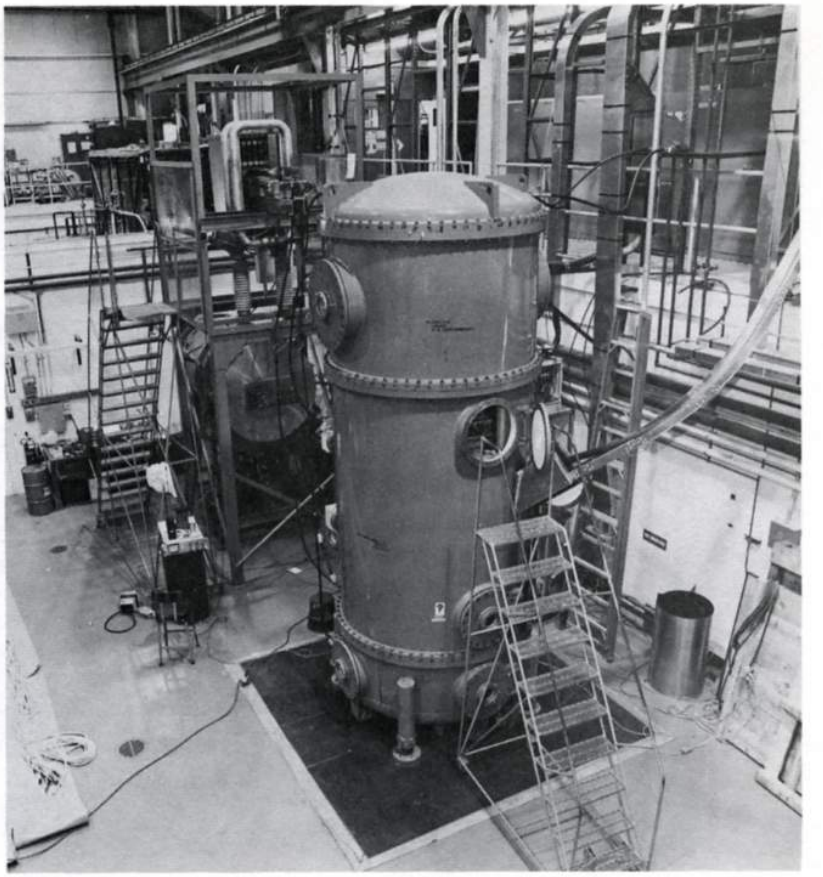
The various components that will eventually comprise TFTR are continuing to come together in the D-Site Test Cell. In this picture, taken in February, the large poloidal field (PF) coils are being connected in place around the machine base. Piled against the wall on the right of the exit are three toroidal field (TF) coils awaiting installation. The inner support structure/PF coil subassembly, which will form the "hole" in TFTR's "doughnut", is visible to the left of the exit near the crane. The upper PF coils began arriving at the test cell March 29.



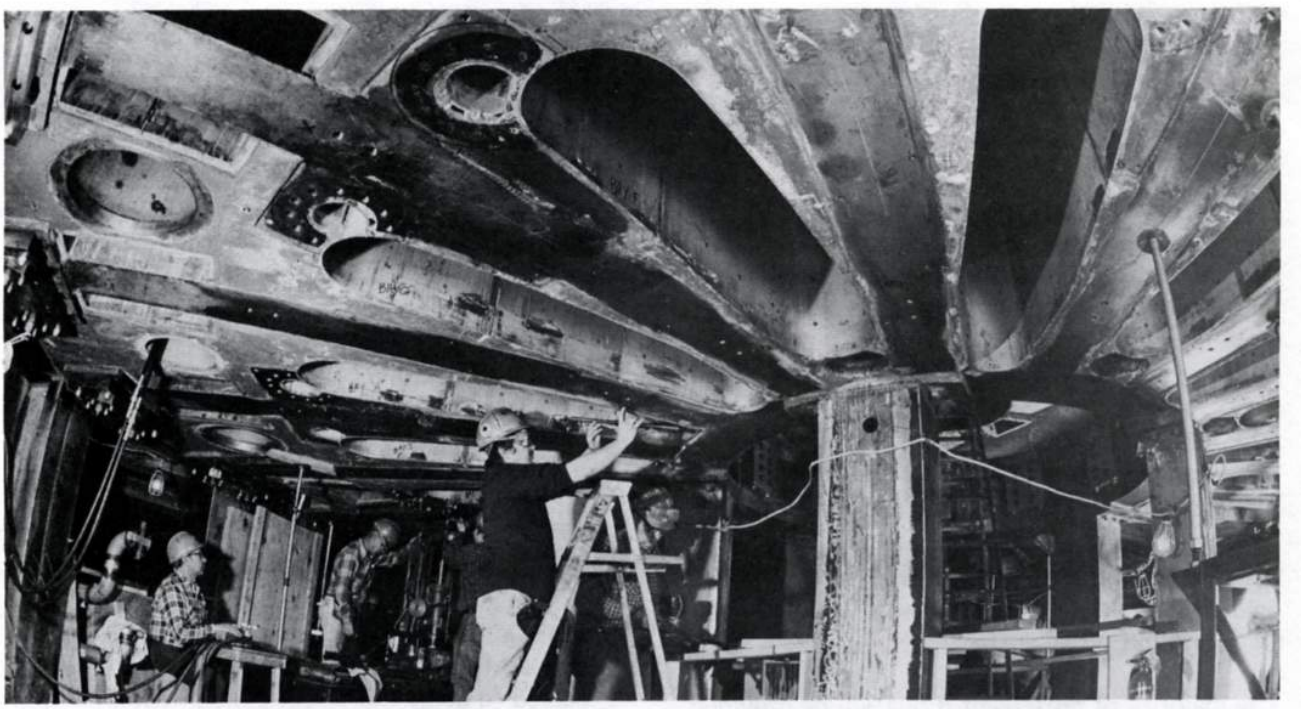
In the picture above, a pair of toroidal-field (TF) coils is being held in an assembly fixture and mated with a vacuum vessel segment. The TFTR will be constructed from 10 such units. The TF coils will carry 23 kiloamperes and generate up to 52 kilogauss. They will be energized for pulse durations of 2 to 10 seconds, with a repetition rate of 5 minutes. They will be water cooled and are housed in special steel cases connected by shear panels.



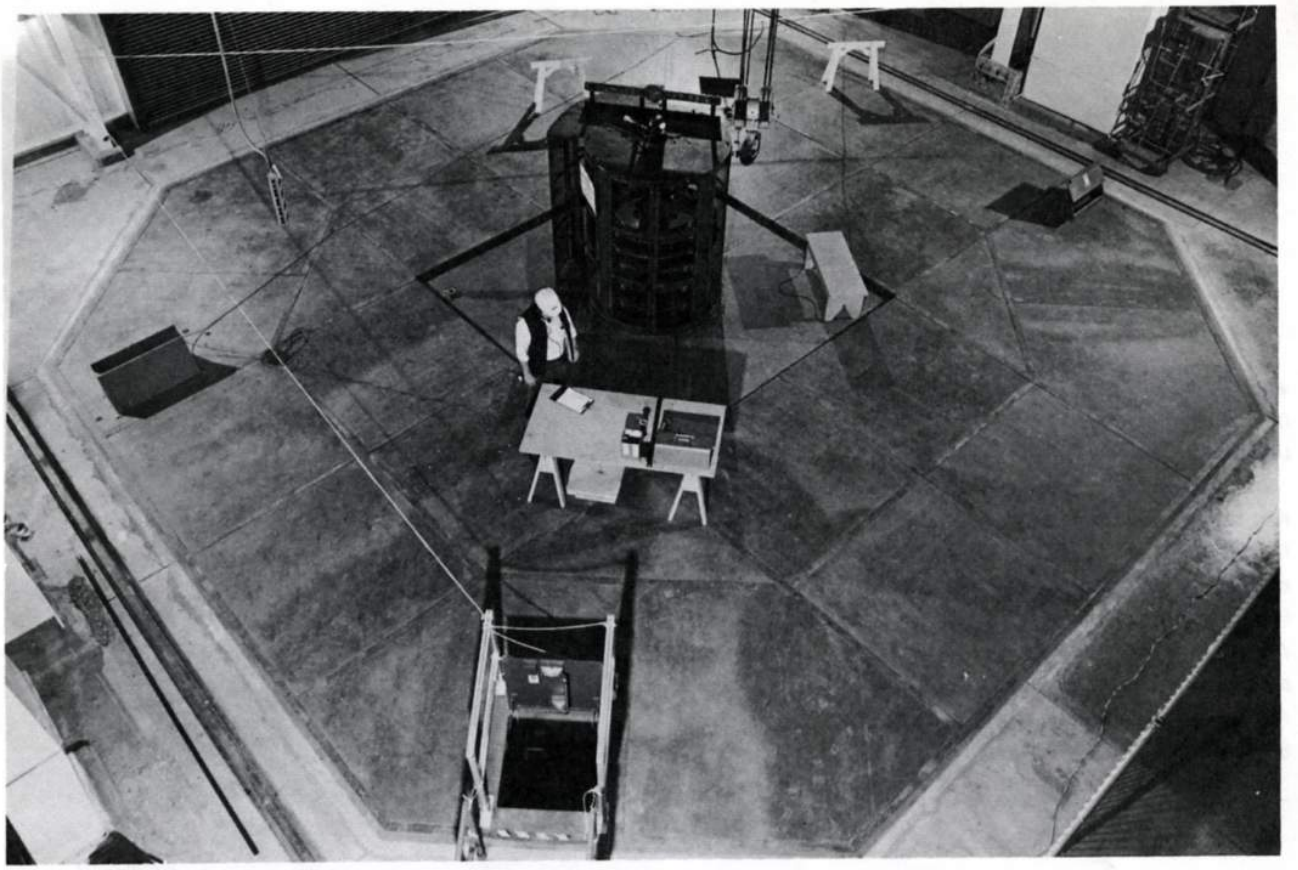
The pump room is part of a 30,000-square-foot basement underlying the TFTR installation. Shown in the foreground are an 18-inch waterline and a 3,300-gallons-per-minute centrifugal water pump for circulating deionized water to cool the TFTR coils. In the background is a 32,000-gallon stainless steel deionized water storage tank.



The 120-kilovolt accelerating supply of the neutral-beam injection system is currently under test. The heart of the accelerating supply is a specially developed tetrode, 3 feet tall and weighing 325 pounds, which is capable of passing about 125 amperes of current and withstanding 250 kilovolts. A large sulfur hexaflourine pressure tank (shown in the foreground) houses the are-power and filament-power supplies of one neutral-beam ion source, floating electrically at 120 kilovolts above ground.



Large racetrack-like openings provide diagnostic access from the underside of the six-foot-thick machine base into the TFTR vacuum vessel. The wide angle shot shown above distorts the machine geometry.



Motor Generator Set No. 1 is currently undergoing acceptance tests, which include balancing. The unit has reached speeds of 330 revolutions per minute during these tests, and has a top speed of 375 rpm. A settlement has been made on MG Set No. 2, damaged during installation in December 1980, allowing for repair and replacement of set components.

MG Settlement

An out-of-court settlement of approximately $8 million has been reached regarding the December 1980 TFTR motor generator set accident at PPL. The settlement will allow repairs and component replacement to proceed at no cost to the University or the government.

Negotiations involving the U.S. Government, Princeton University and Ebasco Services, Inc. have been ongoing with the Belding Corporation, the Reliance Truck Company and their insurers. Under the terms of the settlement, Belding's insurers have paid $3.39 million, while Reliance's insurers paid $4.75 million.

The majority of settlement funds will be provided to General Electric Co. for the removal of damaged components, and the fabrication and installation of a replacement generator. The balance of the recovered funds will offset miscellaneous accident-related expenses incurred by Princeton, Ebasco and the Government.

In December 1980, a crane failure damaged generator components during installation of a second MG set for TFTR. The Chicago-based Belding Corporation, Ebasco's subcontractor, was responsible for the installation of the motor generator. The crane was supplied by the Reliance Truck Company of Phoenix, AZ.

Completion of the replacement generator is scheduled for the fall of 1984. The accident is not expected to delay the TFTR experimental program, since the second generator is only required for experiments in 1984 and beyond.

Alarm Available

As part of a combined crime prevention effort, the University Store has made available at cost the "1st Aid" personal alarm and flashlight. This unit can be comfortably carried as a very functional flashlight, and with a mere flick of the switch gives off an ear-piercing, shrill alarm. Unlike tear gas and mace (which have been virtually ineffective in warding off an attacker), the "1st Aid" alarm will attract attention and, if placed near the ear of an attacker, act as a weapon as well.

The "1st Aid" alarm/flashlight is endorsed by the Security Department, and costs $7.49 including batteries. Departments that have employees who occasionally work late may want to consider the purchase of a "loaner" that can be available for such times and returned by the employee for future use.

The attacks that have been reported in the area in recent months have made personal safety foremost in everyone's mind. The "1st Aid" alarm/flashlight should help return some degree of confidence—and could perhaps save a life.

Holiday Schedule

Three four-day weekends have been incorporated into the 1982-83 edition of the University's holiday calendar.

In addition to Monday holidays on July 5, September 6 and May 30, the laboratory will be closed on November 25 and 26, December 23 and 24, and December 30 and 31.

Current Courses

Two courses, sponsored by the Technology Department's Engineering Program and the Personnel Department, are currently being run on a weekly basis in Sayre Hall. The first, "Physics of Fusion for Engineers", is a series of ten engineering-oriented lèctures highlighting energy and physics. The first lecture, already given by Frank Bennett, will be followed by talks by Dr. Fred Tenney and other noted PPL physicists. Areas of interest to members of the Engineering and Scientific Staff will be discussed.

The second course, "Analog Circuits", is being taught in conjunction with Mercer County Community College. The 12-week course is designed to acquaint monthly support and biweekly staff members with the operating principles of operational amplifiers, power switching circuits, triacs, and transistors.

For further information about either course, contact Human Resources Manager Len Thomas at ext. 2052.

Patent Program

PPL now has a Patent Awareness Program, as well as a Committee on Inventions, to increase the patent awareness of laboratory staff. Five invention disclosures were filed with the committee since December:

- Borated Coatings for Thermal Neutron Shielding, by J.C. McDade and C. Clifford
- Non-Inductive Tokamak Startup Scheme, by R. Horton, M. Ono, T. Stix, K.L. Wong and G. Wurden
- High Transfer Rate Heat Exchanger Cooling Tube, by P. Bonnanos
- Infrared Temperature Monitor, by M. Ulrickson
- Rooftop Resonator, by L.C. Johnson and D.K. Mansfield

For further information about the committee or the program, contact committee secretary Nancy Jones at ext. 2659.

Identification Badges

All employees who have not obtained their new Employee Identification Badge should come to the Security Department in the Gas Dynamics Building at their earliest convenience. If you still have an old badge, it will be deprogrammed and will deny access to the facility after APRIL 15.

Chain Letters

PPL facilities, including Xerox copiers and the mail service, are for official Laboratory business only. Personal chain letters, even though they may be well-intended, are not to be copied or distributed with the use of PPL facilities.

"Dresser" Trip

The Princeton University League is sponsoring an April 21 New York bus trip to see the Broadway play "The Dresser", starring Tom Courtenay and Paul Rogers. The $29 fee covers theatre tickets and transportation. The bus will leave the Princeton Shopping Center at 8:45 a.m., and is expected to return at approximately 5:30 p.m. the same day.

For further information on the trip, call the league office at 452-3650.

Softball Startups

PPL employees will again have the chance to settle intraoffice rivalries on the field of honor, via the PPL intramural softball league.

Organizer Ed Bush said the Warehouse and the Vacuum Shop will be fielding teams this season, and several other offices and departments have expressed interest in the league. Teams must have a minimum of 10 players, and team membership is open to all laboratory employees. Games will be played each Wednesday night at the baseball diamond near the airstrip.

Anyone interested in playing in the league should contact Ed on ext. 3309, Frank Wasiowicz on ext. 3568, or "Bubba" Vinson on ext. 3682 by April 23. The season is expected to start at the beginning of May.

Sports Programs

Len Thomas, Manager of Human Resources, has asked that anyone responsible for sports programming at the laboratory contact him on ext. 2052.

The Secretarial and Office Support Staff (SOSS) will have their annual Secretarial Party April 23 in the cafeteria. The party is open to all secretaries and their supervisors. Refreshments and entertainment will be provided.

Science Fair '82

On March 20, 21 and 22, staff members from PPL's Information Services Branch were "shaking hands" with the masses. The laboratory was participating in Science Fair '82, held at Rutgers University and sponsored by the Research and Development Council of New Jersey.

Thirty-seven exhibits representing several universities, industries and businesses were on display at the fair.

Using models of PDX, PLT and TFTR, Informa- Services staff members explained what fusion is and how our machines work to over 13,000 attendees.

"I was amazed at the public's general knowledge of fusion," said one staff member. " It's good to know that so many people are following fusion research and see our work in such a positive light."

Cafeteria Cautions

Cafeteria trays taken to your office and left there mean no trays in the cafeteria, and inconvenience to lunchtime diners. If you eat in the cafeteria, stop inconveniencing yourself. Return all trays (along with any plates or silverware) to the cafeteria *today*.

Vacation Car Check

While hauling trailers, boats and kids to vacation spots this summer, motorists will find themselves stuck in the middle of the Lincoln Tunnel, halfway up a mountain, or in the middle of the Everglades—all because somebody forgot to have something checked before leaving home.

Most car trouble can be prevented with five basic pre-vacation services:

- Cooling system: Have the radiator flushed and refilled with new coolant if needed.

- Engine: Have a tune-up if your car hasn't been tuned in the last 12 months. Check the engine if it's been tuned more than six months before your trip.

- Brakes: Have your brakes adjusted if necessary. If there's any doubt about the condition of your brake linings, have them checked and replaced if necessary.

- Steering: Be sure there is no excessive play in the linkage. It's also a good idea to have wheel alignment and balance checked.

- Chassis lubrication: This encompasses a lot more than the old fashioned "grease job." It gives your service man a chance to look at the battery, lights, wipers, tires, shock absorbers, belts, exhaust system and the general condition of the car. This is also a good time to change the oil and filter.

Sound like a big job? Not so, because many of these items are routine checks which should be done periodically anyway. And if you find you are about to need a new tire, windshield wiper or radiator hose, where better to have the work done than in your own home town?

Trio Complete Tritium Training

If any group of people at PPL can be said to be well-versed in the state-of-the-art techniques of tritium handling, it would be Mike Candelori, Lloyd Ciebiera and Gene Shropshire. All three men recently returned from the Monsanto Research Corporation's Mound Facility in Miamisburg, Ohio, where they learned the intricacies of the tritium handling system they will be using on TFTR.

Mike, the supervisor of the three-man crew, has been with the University for 23 years. "I was interested in moving into a different type of work, and I got interested in tritium handling," he explained. "Carl Pierce and Halsey Allen took me on board, and sent me out to Mound for six months of training. I spent another year and a half there, working with the equipment we'll be using here."

Most of the work Mike did involved testing plumbing, electrical connections and calibration of components of the tritium storage and delivery system (TSDS). Lloyd and Gene were at Mound for a little over a year, receiving similar training. All three men were taught methods of handling tritium safely, as well as what conditions prevail in a laboratory using radioactive materials and how to deal with them.

"We worked hand in hand with the Monsanto people in their every day duties of handling radioactive materials," Mike said.

Lloyd explained that when TFTR incorporates tritium as part of the fusion process, the radioactive hydrogen isotope will be delivered to the laboratory as a gas in sealed containers. "We'll put it into the tritium receiving glove box and assay it for purity."

TFTR tritium must be 99 plus percent pure upon reaching the torus. Assuring that purity will be part of the crew's responsibility, as will cleanup of all tritium handling areas.

Once the purity of the tritium is established, the isotope is transferred to the tritium storage and delivery glove box, where it is maintained in solid form at specified temperatures and pressures. Small amounts will be bled off as required for experimental use.

Mike explained that the entire tritium system "is designed to protect the employee from the gas." "We checked it out at Mound, and we'll check it again here," Lloyd said, adding that the TSDS performed "extremely well" during testing at Mound.

The system is actually composed of interlocking subsystems, all serving as backups for one another. For example, a primary line carrying tritium is encircled by a second line carrying inert gas. The gas acts to circumvent any tritium escape. Differences in pressure between the two lines also acts to contain the tritium.

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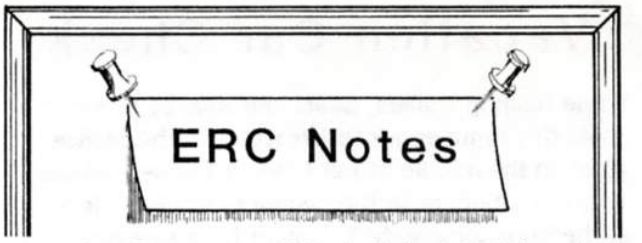
This pressurized protection extends into the various areas where the isotope is used. The pressure in the tritium glove box is lower than that in the vault area, which is lower than that of the room outside it. The variation causes any tritium that may be released to be contained in the release area, rather than leaking into the surrounding areas.

The crew has also been carefully trained in the use of emergency procedures in the unlikely event of a tritium escape. If work in a release area became necessary, crew members would don plastic "bubble suits" to enter the contaminated area. The suits have a supplied air system and are made from 12-mil polyethylene plastic. Crew members would be rotated into and out of the contaminated area, reducing the possibility of tritium exposure.

All three men felt the most important lesson they learned at Mound was thinking an entire operation through before beginning it. "You do have to change your thinking," Mike admitted wryly." "You become very conscious of preplanning everything before you move. It's all part of dealing with a potentially dangerous isotope, but we've found that it doesn't have to be dangerous when you take the proper precautions."

Mary Bersch, formerly Assistant to the Manager of the Information Services Branch, has been promoted to PPL Benefits Administrator in the Personnel Department. Mary is responsible for administering the workmen's compensation, life insurance, salary reduction, retirement and other service programs for the laboratory. She will also assist Human Resources Manager Len Thomas with employee relations and training issues. Mary has been with the University for five and a half years.



Associate Director and Head of the Administration Department Dick Rossi attended the March 10 ERC meeting to discuss employee concerns on management issues. Among the issues discussed were:

- Need for improved communications between management and employees.
- Employee dissatisfaction with current benefits package.
- Employees perceptions of management's concern for staff welfare.
- Employee-Supervisor relations.
- Staff morale and motivation as affected by above issues.

Mr. Rossi explained management's positions and efforts relating to the issues discussed, then requested a continuation of the dialogue. At a special ERC meeting held March 24 for that purpose, the following actions were taken:

- Mr. Rossi suggested that Manager of Human Resources Len Thomas serve as the official communications link between management and the committee, reporting to the ERC at each meeting.
- Mr. Rossi stated the University Benefits Committee has been studying the benefits issues, but he felt there is not much likelihood of changing the laboratory benefits package in the current year—aside from the recently announced change in educational benefits.
- Mr. Rossi met with the PPPL Council and set a May 1 deadline for requesting bids for a public address system, to be used for emergency notification purposes.
- Mr. Rossi also said that mandatory training programs are under consideration for supervisors. Such programs would provide uniformity among managers and their policies.

Pictured here are the PPL employees who have volunteered to be energy monitors for the In-House Energy Awareness Committee. Pictured above are, from left to right, (first row) Ed Costello, Employee Energy Awareness Subcommittee member Pat Zeedyk, John Garbowski, (second row) Abe Simon, Mike Burns, Paul Jones, Ray Pressburger Jr., monitor co-ordinator Steve Ragolia, (third row) Bob Goodwin, Marie Steer, Tom Goedert, Ed Berman, Girard Boyd, (back row) John Hirthler, Floyd Boyd, Bruce Brilliantine, Ben Velivis, Joe Wood, Rich Cargill and Jerry Williams. Pictured below (left to right) are monitors Pat Melsky, Employee Energy Awareness Subcommittee member Mary Ann Brown, Sallie Young, Marie Maruso and Kay Finch. The monitors will remind other employees in their areas of wasteful uses of energy, and will report continual problem areas back to the energy committee for further action.

ppl people

Marathoners Take Training in Stride

Some people think marathoners are crazy. For 25 grueling miles, they force their bodies to perform, to conqueor that last mile, to dredge up that last bit of endurance. They train with a singleminded concentration and determination, running weekly distances that often seem incredible. For few other athletes is the taste of success sweeter than for the marathoner, who arrives totally drained at the finish line.

Bob McCann and Jules Nemeth know that special feeling marathoners share, because they've both competed in several marathons. Both have agreed to share their thoughts on their "crazy" avocation with HOTLINE readers.

Bob McCann

Bob McCann

Bob, a computational physicist on the professional/technical staff, became active in fitness in junior high school. "President Kennedy's youth fitness program gave me the excuse I needed," he recalled.

He took up long distance running in graduate school in the early 1970's. His distance increased when he solved his foot problems. "I have short, wide feet with long toes," he explained, "and when I got shoes that were made for wide feet, it made all the difference in the world. I suddenly found that doing 10 miles wasn't painful anymore."

Bob enjoys running because "you're not really competing against anyone but yourself and your personal standards. Running is something I enjoy. It's my own form of meditation and provides a needed stress relief."

He credits running with relieving tension and reducing the intensity of the migranes he's often plagued with. "Prolonged training reduces the blood pressure, slows the pulse, increases the blood flow, and changes the blood chemistry," he contends. "There are chemicals in the brain (the enkephalins) that are stronger than morphine; they cause relaxation and "runner's high," since they're released when you run." Bob asserts that runner's high is a fact "and you can definitely become addicted to it." He also points out that after four or five minutes of running, the level of the runner's awareness drops, reflexes slow, and thoughts don't flow as quickly. According to Bob, this is probably due to the oxygen debt you build up during a long run; "it's somewhat like getting slightly drunk."

Bob begins training for spring races in mid-February. He'll run unless the wind chill factor drops below 10 degrees F. "In very cold weather," he says, "it's very easy to pull a muscle. But you've

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got to train for several months before you start doing marathons. If your goal is simply to finish, it's not that hard. The training is a long-term thing; weekly distance shouldn't be increased more than 10% per week. Once you're prepared, though, you can usually keep your performance up."

Bob may start training one day a week as long as four to five months before his first long race of the year. When running with others, he paces himself with conversation. "If you can't run and talk at the same time, you're running too fast. I've found that helps to prevent injuries."

When he's training, Bob eats anything he wants—an added bonus to running. "Running provides enough exercise to burn 125 calories per mile. That allows me about one beer per mile or one bowl of ice cream for every five miles." That's a lot of ice cream, considering that Bob puts in 40 to 60 miles per week for several weeks prior to a marathon. He claims that's severely undertraining, and that 65 to 80 miles per week for a month prior to the race would be much better. The week before, though, he rests to allow his body to recover fully from the training.

Bob turned in a 3:45 time in last year's 26 mile, 365 yard Sri Chinmoy marathon in Plainsboro. Two months later, he did a 3:27:39 in the Marine Corps Marathon in Washington, D.C. He's planning to run in the New York Marathon and the Princeton Half Marathon next fall. He's also considering a springtime run through the cherry blossoms in Washington, D.C. as an added challenge.

He reports that when you cross the finish line after 26 tedious, grueling miles, "you just thank the stars that you're still alive!" He's forced to make frequent water stops during runs of 10 miles or more, especially during the summer months. "With high humidity and heat, you can sweat off a puund or more per mile, so dehydration is a constant nemesis in the summer."

That's why Bob advises anyone interested in beginning a running program to get a full physical. "Go to a sports doctor or to a doctor who knows about running," he said. "Then join a running club such as the Mercer-Bucks Running Club. That will help you to steer clear of most of the bad mistakes, and it's more fun to run with other people than it is to run alone. You should also read a magazine like *Runner's World*; it has some very helpful articles in it."

Jules Nemeth

Jules Nemeth

Jules, a preventive maintenance technician, came to PPL in 1975. His interest in running stems from a suggestion made by fellow PPL'er Steve Obst.

"Steve mentioned that running might help me with the mental and physical fatigue I was feeling," Jules recalled. In 1979, he began running short distances, keeping the possibility of running "just one marathon" in the back of his mind. Now he runs a minimum of 10 miles a day, and often stretches that to 20 miles in the hilly areas of East Amwell.

When he started running, Jules ran in basketball sneakers for a week. "I had bad blisters, and I couldn't understand how anyone could run for long distances when it hurt so much," he remembered. Changing to different shoes made a big difference; instead of running less than 20 miles per week, he now usually covers between 50-60 miles. He runs 7½ to 8½ minute miles, and he can go 6½ minute miles "if I really push."

"Running is as much a mental training as anything else," Jules believes. "You can physically keep going at times, but you have to have the mental stamina to want to."

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He admits that "getting motivated is the hardest part of running. When you look outside and it's cold and rainy, it's hard to put on the shoes, get out and get going. But running has helped me cure some negative mental attitudes I've had. It's a very positive high."

When he began running, Jules traveled three miles, "and I thought the world was about to end!" He built up slowly, then ran in the New York Marathon (with a time of 3:30). He followed that with a 3:32 performance in the Philadelphia Marathon a month and a half later. He's currently training for the Trenton Marathon May 1, and will probably run in the New York Marathon October 16, and the Jersey Shore Marathon in December. His first pre-marathon tuneup came March 14, in the 10-kilometer Great Road Race, where he finished in 46 minutes. He also intends to participate in the Princeton Half Marathon in October.

"When you're running for three hours a day or more," Jules explained, "that takes a lot of time. I run twice a day, in the morinig and evening. When I'm training, I eat like a horse: cheese, ice cream, and all kinds of junk food. And I still lose weight!"

Jules begins training for three months before his first marathon, beginning with five miles a day and working up from there. He runs 70 to 90 miles a week prior to a race, and tries to mentally fortify himself on marathon day. He also augments his roadwork with 100 pushups and 100 situps a night.

Jules, who often listens to jazz on his Walkman while doing training runs, finds himself experiencing "runner's high" after about 10 miles. He likens the feeling to yoga: "You find yourself suddenly feeling better, and you can go longer distances."

Approximately 16,800 runners joined Jules for last year's New York marathon. Jules estimated it took him five to eight minutes after the official start of the race to actually cross the starting line, due to the large number of runners. In Philadelphia's marathon, it took five minutes.

He deems concentration the most important thing a runner can have. "When you're concentrating hard, you're always striving to go faster. When you start to hurt, you have to reallly concentrate to keep going." That monent came at the 18 to 19 mile mark in the New York Marathon, according to Jules. He struggled a bit, but managed to complete the race.

Running the marathon wasn't as bad as finishing it for Jules. "Fininshing is the most dangerous time," he believes. "When I finished in New York, I had chills, cramps, nausea and I turned purple!" He's since learned to recognize his body's usual "little hurts" from the pain of a real problem.

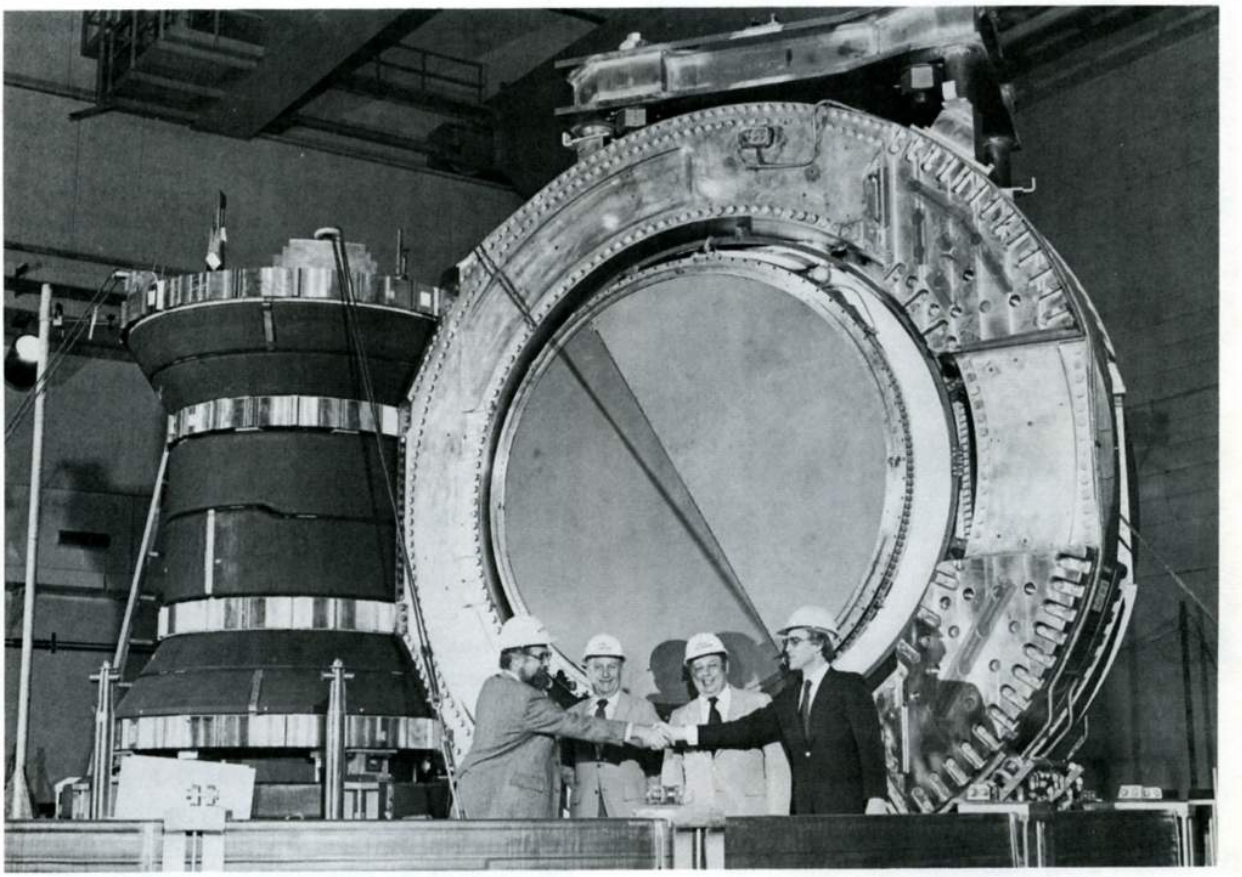
He advised anyone interested in becoming a distance runner to "start gradually; don't go out and try to run five miles the first time. Walk and run some half miles. Get yourself into condition first."

Jules also expressed his gratitude to Steve Obst, without whom "I never would have known the joys of running. After my family, running is the most important thing in my life. It really gives me an increased mental awareness, and an overall improved attitude."

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 Information Services, Module 2, C-Site, James Forrestal Campus, ext. 2754.

HOTLINE
PRINCETON PLASMA PHYSICS LABORATORY
Vol. 3, No. 11 May 13, 1982

TFTR Module Placement Milestone



Celebrating the recent installation of the first TFTR segment module are (left to right) PPL Director Dr. Harold Furth, TFTR Program Head Don Grove, Associate Director and Head of Technology Paul Reardon, and Dr. Milt Johnson, Chief of the Engineering and Physics Branch of DOE-PFPO.

A major milestone on the road toward TFTR completion was passed April 16 when the first of 10 segment modules was lowered into place in the TFTR Test Cell.

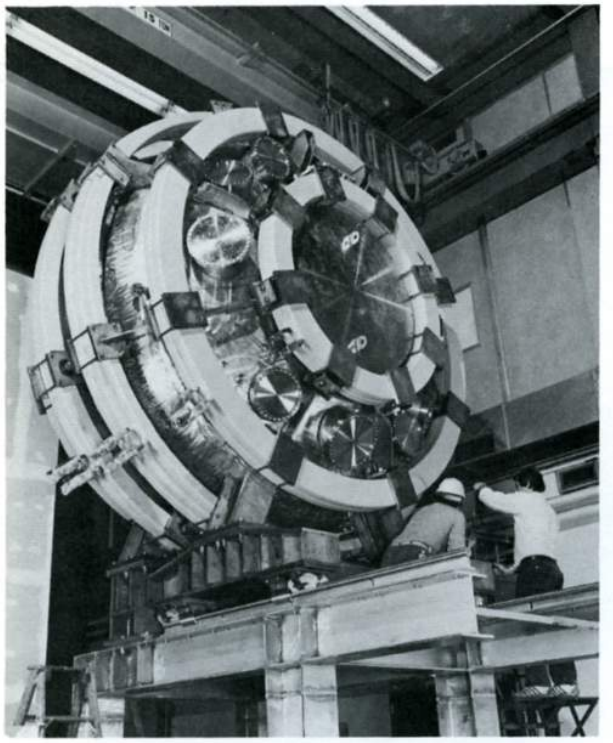
The 72-ton module consists of a slightly curved cylindrical vacuum vessel section, two 25-ton toroidal field coils, and interconnecting support structures. The completed vacuum vessel will weigh 80 tons, and will be surrounded by magnetic field coils composed of approximately 600 tons of copper and insulating materials.

The vacuum vessel segments were manufactured by CBI, Inc. at their Greenville, PA plant. Westinghouse Electric Corporation fabricated the 20 toroidal field coils currently being installed.

Construction of TFTR is slated for December completion.

Spheromak Update

As summer approaches, so do two of the most important milestones in PPL's spheromak program. The machine's PF/TF capacitor banks are scheduled to be ready at the end of May, and fabrication of its flux core is expected to be finished in August. The flux core is technically the most challenging component of the S-1 project.



Testing continues on the Spheromak, which has been mounted on its stand. The machine is due to receive its flux core in August.

Dr. Robert Ellis, head of the spheromak fabrication program, recently said work on the project has been proceeding on schedule. He added that the chemical milling of the flux core's Imonel liner had begun after test pieces successfully survived the process.

The spheromak flux core structure consists of fiberglass-epoxy (G-10) plates, which support poloidal field (PF) windings, an equilibrium field (EF) winding, and a toroidal field (TF) winding. The assembly is wrapped in fiberglass tape and potted into an aluminum shell that helps to "smooth out" the magnetic fields being generated.

The final step is to wrap the core in fiberglass and pot it into its Imonel (a nickel-based alloy) lining. Since the lining has an average thickness of .010" to .015", the final thickness is produced through chemical milling. Although the lining was obtained from an outside vendor, the preparation for chemical milling was done at PPL, which Dr. Ellis called "a rather impressive achievement for our shops."

Quite a bit of progress has already been made toward completing S-1. Coil stacks have been mounted into the machine's second dome, and that dome has been mounted onto the machine structure. Installation of the dummy center section permits technicians to do final vacuum system checks on the machine. The vacuum vessel was successfully pumped down to 10^{-8} torr without difficulty during vacuum shop testing. Electrical leads are being installed while work proceeds on the flux core. Work is also continuing on the S-1 control room.

The spheromak configuration requires external poloidal coils in addition to the toroidal plasma current, but the torodial field is generated entirely by currents that flow in the plasma itself. The spheromak allows a device that is easier to construct, because no toroidal field coils link the plasma.

The S-1 experimental program is directed by Dr. Masaaki Yamada.

Initial goals for the experiment include establishing basic plasma parameters and magnetohydrodynamic (MHD) stability; and investigating gross MHD instabilities. The first plasma experiments are scheduled for March of 1983.

After Hours Access

In addition to the new identification badges, an access control form has been developed to alleviate inconvenience for PPL employees in the performance of their tasks. Each departmental head will receive a supply of these forms, along with instructions for completion.

If an employee needs access to areas other than those his ID card is programmed for, his supervisor

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should designate those additional areas on the access control form. The employee's ID card code will then be altered to reflect the change, on either a temporary or a permanent basis.

Questions regarding use of the forms should be directed to the Security Office, Chem Science Building, B-Site, ext. 2894.

FTS Usage Change

As of October 1, 1981, PPL is being charged 30 cents a minute for every FTS call. This charge is a nationwide governmental policy, and will be in effect until further notice. Therefore, it is no longer cost effective to use FTS within a 100 mile radius of the laboratory.

FTS should never be used after 5 p.m., and calls placed through an FTS operator should be avoided. If you cannot dial an area code via FTS, use commercial lines.

Planning your calls, and collecting needed information prior to calling, will also save time and money in telephone bills.If your call will be lengthy, check Bell Telephone's charges; in many cases, it will be less costly to use commercial lines.

Be aware that telephone useage is no longer a neglible factor in departmental budgets. Rapidly rising costs have made it an item to watch closely in the future.

Computer Reorganization

On April 16, Associate Director and Head of Technology Paul Reardon announced the formation of a new division within the Technology Department. The CICADA Branch of the TFTR Operations Division of the TFTR program has been merged with the present Computer Division of the Engineering program.

Bob Daniels is heading the new division, with Nick Krisa as deputy head of this division. A new organizational chart will be published by Personnel shortly; in the meantime, Bob and Nick will function as division head and deputy division head for the existing organizations.

Emphasizing the importance of bringing TFTR online, the new division will report to Don Grove, Head of the TFTR program. It will also be in close communication with Ellis Simon's Computer Policy Subcommittee of the laboratory's Technical Operations Committee, ensuring that the global laboratory requirements for computer operation are not jeopardized by this reorganization.

At an appropriate time in the future, this division will be transferred back into a suitable Technology Department unit more appropriate for performing its broader role once the TFTR turn-on and initial operation are brought to a successful conclusion.

Experimental Program Head Dr. Dale Meade (left) and Didier Gambier, visiting staff member from EURATOM/CEA in France (right) escort Tunisian Prime Minister Mohamed Mzali (center) through the laboratory. Mzali visited PPL as part of a speaking engagement on main campus April 26.

Great Adventure Tickets

Discount tickets for Six Flags Great Adventure are now available from Meg Gilbert in the PPL Personnel Office. The free tickets entitle laboratory employees, their families and friends to discount admissions to the safari and theme parks, as well as to reduced rates in hotels near the park. The tickets may be used throughout the 1982 season.

For further information, call Meg at ext. 2036

Obituary

PPL employee Frank Hume, 61, of Morrisville, PA died April 6. Mr. Hume, who joined the laboratory staff as a "B" technician 26 years ago, worked as a specialist on the Monthly Support Staff, Engineering Services, FOM Division. Joe Csenteri, his supervisor, said, "Frank was well-versed in all electrical, electronic and metal skills, and was a valuable, dedicated employee. He was admired and respected by everyone."

Information Fees

As of April 21, NJ Bell Telephone has begun charging customers for Information calls.

The laboratory will be allotted a number of free information calls each month, but every call over that limit will be charged at 10 cents per call. This charge applies to both the 609 and the 201 New Jersey area codes.

Employees should make note of frequently called numbers, and refer to the list before calling information. Additional NJ telephone directories are available from the Telecommunications Department.

Talk Slated

PPL Assistant Director Robert Sheldon will explain "The Financial Management of PPL" to laboratory employees May 24 in the Gottlieb auditorium.

"The laboratory has grown dramatically over the last five years, "Sheldon said, "especially with the advent of TFTR. "He added his hope that his talk will give employees "a sense of proportion and perspective about the lab."

The talk, sponsored by the Human Resources Management section of the Personnel Office, will be presented twice during the day. Employees whose last names begin with A through M are asked to attend the 2 to 3 p.m. session; those with last names beginning with N through Z should come to the 3:30 to 4:30 p.m. session. All employees *must have their supervisor's approval* in order to attend either session.

TFTR Parking

PPL employees – especially those who have occasion to work at the TFTR site – should note that general parking is NOT available on the site. Because of the "exclusion area" concept, long-term plans for the site provide only a few short-term parking spaces near buildings. The existing open areas still belong to the construction contractors, for their exclusive use for storage and parking for their own employees.

In order to accomodate the necessary movement of tools, equipment and materials into and out of TFTR buildings, six 20-minute parking spaces have been provided. If you must park outside a designated space in an emergency, be sure to leave a note on the windshield for the Security Officer. Any special problems involving parking or other access to the TFTR site should be referred to Halsey Allen or the Security office.

The shuttle route has been altered to pass between the TFTR site and the Tech Shop, RF and Maintenance Buildings. Additional walkways in the vicinity of the cooling towers are expected to be provided.

Occupancy of the buildings at the site is a significant milestone in the laboratory's progress toward the goal of an operational TFTR. Everyone's cooperation and assistance in working out the "bugs" that will inevitably occur as progress continues will be most appreciated.

For Sale By Owner

Matthews-built 1903 townhouse on tree-lined street. Seven minute walk to Firestone library, two minute walk to NY City bus. Fully modernized, spacious with elegant craftsmanship. Four bedrooms, 2 ½ baths, dry basement with wine cellar and pantry. Attic and fenced private yard. Principals only, call 921-1786.

Guinea Pigs

Employee Relations secretary Meg Gilbert raises guinea pigs as a hobby.

Currently, Meg has a frisky litter of four available for adoption. If anyone is interested, please call Meg at ext. 2036.

Award Winners

Brian (left) and Mark Brown pose with their awards from the Greater Trenton Science Fair. Mark was the grand prize winner at the Fair, sponsored by the Trenton Engineers' Club and The Trentonia. Both boys are the sons of PPL's Mary Ann Brown.

Mark David Brown, son of PPL's Mary Ann Brown, recently won the grand prize — and many others — in the 30th annual Greater Trenton Science Fair, sponsored by the Trenton Engineers' Club and The Trentonian.

Mark, whose grand prize entry was entitled "Corona Enhanced Heat Exchange," won an all-expenses-paid trip to Houston to compete in the International Science and Engineering Fair May 10 through 15. His project also garnered awards from the U.S. Department of Energy and Western Electric, as well as the U.S. Army Senior Division Physics Medallion.

Mark, a 17-year-old senior at Notre Dame High School, is no stranger to winning science fair awards. He entered a project on "Measuring Molecules Using the Langmuir Molecular Film Balance" in last year's Greater Trenton Science Fair, and walked away with first place awards from the Junior Engineering Technical Society, the New Jersey National Bank, and the National Council of Mathematics. The project also earned several other awards at the fair, and won Mark a place in the honors group in the Westinghouse science contest.

Mark has entered this year's project in the second national Space Shuttle Student Involvement Project, sponsored by NASA and the National Science Teachers' Association. He has been selected as a semifinalist in the project; national winners will be announced at the end of May. Should Mark win, his project would eventually be part of the payload of a future shuttle flight.

Mark, who plans to major in engineering in college, will be competing in the SEER Science Fair April 29 through May 2. He has also been nominated to "Who's Who Among American High School Students."

Mark's brother Brian, 13, is no slouch in the science department either. His project, "Balancing Tensile and Compressive Forces," won first place in the junior physical division of the Trenton fair. Brian's entry also received awards from the Junior Engineering Technical Society, Ransome Airlines, and a junior division certificate. He won a number of awards at last year's fair with his project "Surface Tension Experiments."

Brian, a student at St. Paul's School, also plans to study engineering in college.

Garden Plots

Mother Nature fooled with the garden plot program last month, when snows held up plowing of the garden tracts. PPL planters are asked to be patient in awaiting assignment of their plots; applications are being processed as quickly as possible. THERE ARE NO AUTOMATIC RENEWALS OF GARDEN PLOTS; PLEASE DO NOT PLANT UNTIL YOUR PLOT ASSIGNMENT HAS BEEN CONFIRMED!

Forty-one garden plots are still available at the B-Site tract. To reserve one, send your name,

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office address, extension, and location of the site you used last year (if any) to the Human Resources Section, c/o Meg Gilbert, Sayre Hall B-Site.

Gardeners are also asked to avoid driving or walking over the air strip under any circumstances. This practice could pose serious problems to planes attempting to land on the strip.

For further information on the garden plot program, call Meg at ext. 2036.

Evacuation Regulations

Is "smoking" hazardous to your health? Definitely, in the opinion of PPL Fire Chief Jack Anderson.

Chief Anderson reminds all employees that for their own safety, *everyone* must evacuate any structure with a fire or smoke condition. Remaining in or around an affected area without protection could result in the inhalation of some of the hazardous gases produced during a fire. Gases such as carbon monoxide, carbon dioxide, hydrogen sulfide, nitrogen dioxide and a number of other toxins may be present in smoke.

Once evacuated, personnel should not re-enter the affected building until the area is cleared and judged safe by Chief Anderson.

Don't let curiosity be the death of you; stay away from any fire or smoke condition, and allow Emergency Services Unit personnel to do their jobs

Quilt Exhibit

Quilts designed and constructed by Alessandra Mazzucato and Emily Wolin will be on display in the Dorothy Brown Room of the Princeton University League headquarters through May 14. Both Alessandra (the wife of PPL's Ernesto Mazzucato) and Emily are members of the Princeton YWCA Artisan Guild.

The exhibit may be viewed Monday through Friday from 9 a.m. to 1 p.m. at the league offices.

ERC Notes

The ERC held its monthly meeting on Wednesday, April 14.

Len Thomas, in his new role as liaison between the ERC and lab management, presented a written report of progress made on some issues raised at the March 10 meeting with Dick Rossi.

The poor lighting in the parking lots after hours was discussed. It was stated that an employee who feels uncomfortable walking to the lot after hours should call Security and ask to be escorted. The likelihood of obtaining additional lighting is remote.

The grievance policy previously distributed was reviewed. It was suggested that a specific time limit (for each step in the procedure) be stated in the policy.

The cafeteria committee will look into specific complaints regarding the B-Site cafeteria.

Steve Ragolia volunteered to be in charge of the recreation equipment this year.

A question was raised about SOSS seminars being scheduled during lunch hours. Many women feel that this is unfair, as most other groups in the laboratory do not have to use their lunch hours to hold seminars.

The feedback received about the early dismissal on April 7 was that it went much more smoothly than previous snow-closings.

Volleyball

Add experienced players to beginners, and your "net" result will be the weekly PPL volleyball games, which began April 27. Games are played each Tuesday, using nets located in the large field by the air strip. Play begins at 5 p.m. and

continues until darkness falls. Volleyball enthusiasts of all skill levels are invited to play.

For additional information, call Tim Bennett at ext. 2574, Anne Golden at ext. 2444, or George Cutsogeorge at ext. 2119.

J.R. Partiyka, a certified optician with the Fend-All Company, checks the fit on John Vallace's glasses during the monthly PPL safety glasses program. Program coordinator Dick Carlese reported that approximately 40 people have taken advantage of the program since the beginning of the year, "a very significant increase." Monthly visits by the optician are held in the LOB Commons area; for more information about the program, contact Dick at Health and Safety, ext. 2533.

IRA'S In A Nutshell

An Individual Retirement Account (IRA) is a tax-sheltered account which enables you to save on your income taxes *now* while earning money for your retirement years.

Single people can contribute up to $2,000 per year to an IRA. Married couples with only one wage earner can contribute a yearly $2,250 to their IRA account. Married couples with two wage earners may contribute $4,000 ($2,000 each) into IRA's. You can deduct the amount you deposit during the year from your gross income, which means you'll pay less in taxes. Income taxes on money deposited in an IRA (or on the interest the account is earning) are not paid until the money is withdrawn.

Although penalties will be charged for premature withdrawals from an IRA, you can withdraw from your account after you reach age 59½ — even if you haven't retired. You *must* begin withdrawing your money upon reaching age 70½.

IRA's are being offered at the University. Employees Federal Credit Union. Employees have the option of making contributions to their account through payroll deductions. You will earn 8 percent interest per year, which is compounded quarterly so the effective yield is approximately 9.238 percent.

If you prefer to deposit a lump sum into an IRA (assuming that you will have earned income for the year to cover the amount of the deposit), you may purchase an IRA certificate with a minimum deposit of $1,000. The certificate will mature one year from the date of purchase, with interest computed at the rate in effect on the date of purchase. Certificates are compounded daily, so the effective yield is always higher than the annual rate of interest. Check with the credit union business office for current certificate rates.

Anyone interested in further information on IRA's or in opening an IRA account with the Credit Union may contact Florence Wnuk at the business office, ext. 7-2-5038.

Room Renovation

The former Printed Circuit Laboratory in the Matterhorn Building, gutted by fire last year, has now been totally refurbished. It will be housing strain gage installation and instrument fabrication work for Graham Brown's Material Testing Laboratory.

The lengthy cleanup was a concerted effort by employees representing every skilled trade, according to Maintenance Supervisor Walt Weyman, who coordinated the cleanup. Approximately

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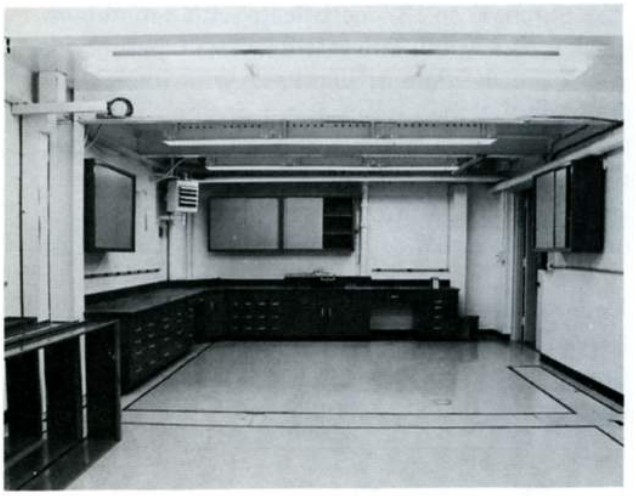
130 man-hours of work were expended during the cleanup.

Walt said the initial decontamination phase was the most tedious and time-consuming step of the operation. All electrical wires and hookups had to be removed, and the walls and floors thoroughly scrubbed prior to painting. "It was a real mess," Walt recalled, "and some real dirty work."

Walt added that the room has "been rebuilt from the bottom up." The ceiling and floor tiles were removed, as was all the equipment in the room. Duct work that could not be repaired was replaced. New lab furniture and new plumbing were installed, and lighting and new electrical work were connected to a new electrical service. A new coat of paint and new flooring completed the job.

PPL employees who worked on the various stages of the cleanup include Ed Gilsenan, Buzz Bauer, John Sadovy, Gerry Hart, Mitch Dorum, Ed Naprawa, Bill Allen, Roy Whitley, Wayne Robinson, Bob Cancel, Joe Perroni, George Kalescky, Doug Gunn and Charlie Smith.



The former Printed Circuit Laboratory in the Matterhorn Building after its lengthy cleanup. The room was gutted by a fire last year, and was rebuilt by Plant Maintenance employees.

Picnic Preview

Mark June 19 on your calendar; that's the date of the annual PPL Picnic. Further information will be published in upcoming issues of the HOTLINE.

Safety Note

If any department needs an Eyeglass Cleaning Station, contact the Safety Office, ext. 2526. Cleaning solution and tissues for stations already installed can be obtained from the stockrooms.

Sue McMahon of Accounting has been promoted from account clerk to administrative assistant. Sue, who has been with PPL for six years, will be handling the major subcontracts for the laboratory.

Travel Tips

The People's Express TV commercials do have a point: Fares for airline travel are confusing. You could be seated next to someone who paid half (or twice) as much as you did for the same seat, same flight, same service, same destination. The best assurance you have for getting what you want is to make your reservation early and not change it!

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Basically, there are direct and connecting flights. But there are variations for each:

A direct flight is either nonstop, or has one or more stops. The direct nonstop flight is the fastest, often the cheapest, and the most likely to get you and your luggage to your destination at the scheduled time.

A direct flight with one or more stops will use more time (needed for passenger boarding, fueling, food), but you do not need to change planes, nor does your luggage have to be moved. Count on at least an hour for each stop.

Connecting flights differ in several ways. Common to all is that there will be a stop and change of planes. Whether flights are online or offline (with the same airline, or carrier; or with a different airline) can make little difference in a small airport, but quite a large difference at O'Hare in Chicago. When an agent tells you that minimim connecting time is one hour at one airport and perhaps ninety minutes at another, the size of the airport is probably the reason; there might even be a change of terminals. When it is necessary to use a connecting flight, the best route is to stay on the same airline if possible.

Since costs are directly related to air miles, a connecting flight can be more expensive than a direct flight. When applicable, a combination fare (less than the total of each individual leg) is quoted. Since combination fares are not included in the Official Airline Guide (OAC), the exact fare would not be known until the reservation is actually booked. However, a direct flight is usually the flight with special fares.

Although there are basically two types of fare construction (economy or first class), the many special fares now available because of deregulation are the fares most people ask for. However, these fares do have restrictions. The restrictions are applied by individual airline and can differ greatly. They include:

- Making round-trip reservation with a minimum and/or maximum time for completion of the trip
- Having a stated percentage of seats available at that price for each flight
- Reservation and/or payment deadlines
- No stopovers allowed
- Different fares for different seasons
- No changes of airline allowed
- Deadlines for changes of reservations (or no changes allowed)
- Cancellation charges

If you think you did not get the lowest fare possible, ask what the fare basis was. Chances are your reservation didn't qualify for a special fare.

Standard operating procedures in the Travel Office are to request the lowest fare on American carriers. A slight change in your itinerary might be suggested in order to quality you for a lower fare. For example, if a difference of two hours on departure does not make a difference to your schedule, it might allow online connections or use of the same airline for the entire trip. This could save money on fares.

If you do have personal requests, make them know at the time of the original reservation request. Special assistance at airports, special dietary needs, seating arrangement, charging your ticket through a credit card – these can be handled more easily if known in advance.

Remember, too, that every time you change your reservation you are adding to the cost of doing business – for the airline, for whoever writes the ticket, and for yourself.

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 Information Services, Module 2, C-Site, James Forrestal Campus, ext. 2754.

SOSS Festivities

The Secretarial and Office Support Staff (SOSS) held their annual Secretaries' Week party April 23, and a good time was had by all.

Following an introduction by SOSS chairwoman Muriel Strohl, laboratory Director Dr. Harold Furth welcomed the attendees and praised PPL secretaries. New Associate Director James Clark was the main speaker at the party.

The SOSS presented plaques to Millie Lefler of PDX, Ellie Weed of Procurement, and Eleanor Rosfjord of Accounting. All three honorees are retiring from laboratory service.

Jack Hart and Roy Little drew names to receive several hanging baskets. Plants went to Sandy Winje, Charlene Onofri, Flo Short and Verna Weyman.

The highlight of the afternoon, however, was Dee Hurley's rendition of "TFTR", sung to the tune of "New York, New York". Joining Dee were the "Fusion Enerjazzers", a "chorus line" consisting of Don Cardin, John Clarke, James French, Don Grove, Paul Reardon and Robert Sheldon. Dee received a plant from the SOSS in recognition of her efforts in organizing the entertainment portion of the party.

The party was catered by the C-Site cafeteria staff, and was organized by Anne Golden and her assistant, Laura Steer. SOSS seminar committee members who worked on the party include Gloria Pollitt, Mal Pulaski, Edna Willis, Dot Pulyer and Helen Quinn.

SOSS officers were also introduced during the party. Ann O'Day is vice-chairwoman of the group, with Anne Golden as recording secretary, Dolores Bergmann as corresponding secretary, and Flo Short as past chairwoman.

ppl people

Cooperation Aids Canadians' Research

Benoit LeBlanc (left) and Barry Stansfield

International cooperation has always been the rule rather than the exception in the fusion community. An example of that cooperation involves Benoit LeBlanc and Barry L. Stansfield, two Canadian physicists doing experimental laser work at PPL.

The pair's experiment involves what could eventually become a new plasma diagnostic. "We're exciting hydrogen atoms with a dye laser," Ben explained. The dye laser is used because its wavelength can be changed; "not all lasers are tunable," he continued.

"We tune the laser to the exact transition wavelength for hydrogen H-alpha radiation, and shoot it into the plasma. The excited atoms then radiate photons, and we try to read their scattered signals."

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The experiment provides information on the local distribution of excited atoms; in order to measure the total neutral density, the data must be combined with a collisional-radiative model and computed. The neutral density so determined is then compared with existing codes in order to understand neutral atom transport.

Barry recalled that he and Ben were "working on this experiment at the Institute National de la Recheche Scientifique (INRS) laboratory in Montreal. Boris Grek (who works on Thomson Scattering in PDX) was a former professor at INRS, and we've kept in contact with him. He made the arrangements for us to come here, and we've been working here on and off since October."

Barry and Ben's project is associated with Dirk Dimock's Laser Optics Group. "We're tied in with the optics being used here, "Ben said. "Those optics are optimized for Thomson Scattering, however, not flourescence observation. That's a problem, since the volume of the plasma interacting with the laser is very small, and the signal-to-noise ratio is very low."

Barry explained that the laser's light shines on one portion of the plasma, and readings must be taken against the surrounding plasma environment. "It's like having a spotlight shining in your eyes, and trying to tell whether a flashlight being held next to the spotlight is on or not. You need rather sophisticated equipment and good data aquisition handling to extract the signal from your observations. Believe me, it's hard!"

The duo's next step, according to Ben, will be to numerically combine the results from several experiments in order to increase the effective signal. This should allow more fine-tuned reception of the signal from the plasma-laser interface.

"We've learned a lot by having to make our system work in the tokamak environment," Barry contends. "It's quite a different kettle of fish from making it work in the laboratory!"

Both men are hoping to use the expertise gained at PPL in Canada's infant fusion program. "The Canadian physics strategy is how to get involved in the international fusion club. We now have the money to build a tokamak; it will be smaller than PLT, and a shade smaller than the ISX. We'll be developing non-standard diagnostics to use on the machine, and we'll also be experimenting with reversing current in the plasma," Ben concluded.

Approximately $35 million has been budgeted for the project, which will be located near Montreal and is expected to be completed by the end of 1984.

"Our experience here has been a real learning experience in that respect," Barry feels, "since few scientists in Canada have really experimented on tokamaks. You can almost think of us as missionaries!"

If the two are missionaries, they're hardly in an unfriendly country. "We've had a tremendous reception here at PPL," Barry enthused. "It's amazing how stimulating an environment you have here. You get the feeling the scientists know what they want to do, that they're concentrating all their efforts on it, and that's producing the world's best work. The quality of people here is extremely good, and their openness and helpfulness is great. They always seem to have time in a busy schedule to talk to us, or give us a hand. PPL has an extremely friendly atmosphere, from the top to the bottom!"

HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

Vol. 3, No. 12 May 17, 1982

PLT: Lower Hybrid Current Drive Extended Record Power Levels With ICRF

Current drive by lower hybrid waves was extended to record-long pulses of up to 3.5 seconds on PLT during experiments on May 6. One second had been PLT's previous mark.

The 800-MHz waves were used to drive a current of about 160 kA in low-density ($\bar{n}_e = 3 \times 10^{12}$ cm^{-3}) plasmas. Toroidal field strength averaged about 20 kG. Radio frequency power input was 75 kW.

The ohmic heating transformer initiated the discharge and maintained it for the first 0.2 second. Lower hybrid waves kept the current constant for the remaining 3.5 seconds.

According to physicist Bill Hooke, the limiting factor in the experiments was not the effect of the waves on the plasma, but rather the normal precautions taken to safely extend the pulse lengths of the lower hybrid generating system and the toroidal field coils.

Currents are optimally driven in PLT when the lower hybrid waves are caused to propagate along the axis of the vacuum vessel. With proper phasing of the waves, they selectively accelerate those electrons already moving in the direction of propagation and a current is driven.

Besides the success of the lower hybrid current drive, the PLT group has boosted the ICRF power input to the plasma to over 3 MW using the 42-MHz system for second harmonic hydrogen heating. Mean plasma energies of about 4 keV were obtained for densities of 3.5 to 4x10^{13} cm^{-3}. A relatively low toroidal field of about 14 kG was used.

Installed in May of 1980, the power input from the 42-MHz system has been steadily increased through improvements to the coupling systems. It is rated for a maximum of about 4 MW at 42 MHz and about 5 MW at 55 MHz. In these latest experiments conducted April 23 and 24, heating, confinement, and stability showed no deterioration with the higher power input. "Everything seems to scale up well from previous experiments," said experimenter Pat Colestock.

PDX: Exploring The Limits of Beta

A new "trophy" has been added to the case above the PDX control console, representing the attainment of a new record for beta values achieved by PDX.

In experiments on April 29, average beta values of 3% were obtained at magnetic fields of slightly above 9kG. Densities were about 3-5x10^{13} cm^{-3}. Ion and electron temperatures on axis were about 1.5 and 1.0 keV, respectively. All four neutral beams were used.

Beta is the ratio of the plasma pressure to the strength of the confining magnetic field. The plasma pressure is the product of temperature and density. The higher these values above the minimum needed for fusion to occur, the more fusion power is produced. A higher beta value means that greater plasma pressure, and thus more fusion output, is being achieved in a given magnetic field.

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Since stronger magnetic fields require larger magnetic coils, beta values are directly related to the economics of fusion power production.

Theoretical limits for beta in circular plasmas on PDX are estimated to be 1.3 to 5% depending on a number of factors including the aspect ratio, the plasma current and the shape of the plasma. In the ISX tokamak at Oak Ridge National Laboratory, it was found that the loss of confinement with increasing neutral beam power was such that beta values higher than 2.5% could not be attained.

On PDX, however, the results have been more encouraging. A similar but less severe loss of confinement is seen, but even at 3% beta, it seems to be more an operational factor related to the particular characteristics of the experiment rather than a hard and fast limit.

Experimentation on PDX through the summer will continue to explore the limits of beta values and to determine how beta affects or is affected by plasma/wall interactions, the plasma aspect ratio, and divertor operation.

Cafeteria Conservation

The following is an open letter to fellow employees from the C-Site Cafeteria Committee:

In the last three months the utensil inventory in the C-Site cafeteria has been reduced by over 300 forks, 140 large salad bowls, 60 small salad bowls, and 76 9-inch plates. We don't have a current count on the trays, but those have also been disappearing.

When the cafeteria and laboratory management are doing everything possible to improve facilities and food, it would be distressing to return to plastic and paper eating utensils. However, the budget does not allow for replacement of equipment at this rate.

What happens to the utensils? Multiply that one tray, plate and fork sitting under your desk (or your co-worker's desk) by the number of employees who buy takeouts but neglect to ask for and use takeout utensils. It doesn't take much imagination to understand why there aren't any forks left by 12:30.

Would you remove trays, plates or forks from Good Time Charlie's? How much do you think prices would increase if customers did that? For how long would they allow you in the door if you did that?

Cafeteria prices are already an employee benefit and subsidy. Help this benefit go into the food provided, not into reusable, expensive tableware.

The C-Site Cafeteria Committee

N. Jones, Chairman
O. Bernett
D. Muschal
L. Tindall

(watch for Cafeteria Amnesty Day)

"Run For Fun"

Legpower will be the order of the day Tuesday, May 25 when the second annual PPL "Run for Fun" gets underway at 12:30 p.m.

Entrants will follow a three-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. Juice will be available for parched participants, and Human Resources Manager Len Thomas of the Personnel Deparment will present trophies to the first place male and female finishers.

Anyone interested in joining the run should register with Barbara Safaty at ext. 2440. Registrations will be taken until 10 a.m. on the day of the race.

RIDE WANTED -- Sylvia Farley of Personnel is interested in ride-sharing with employees from the Kuzer Road-Hamilton Township area. She would like to leave at 7:30 each morning, and arrive home at about 5:30 p.m. Anyone interested should contact Sylvia at ext. 3003.

HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

Vol. 3, No. 13 June 1, 1982

MG Set Reaches Speed Goal

The first motor generator set for TFTR was successfully spun at 375 revolutions per minute (rpm) during testing May 13. This was the first time the unit had reached its top-rated speed.

Dr. Ernst de Haas, lead engineer for the TFTR MG sets, pointed out that the unit achieved the speed mark with a balance tolerance of .018 inch. Testing will be continued until the set achieves the 375 rpm speed with a .010 inch tolerance.

Once balancing is completed, a final mechanical test requires the MG set to be spun to 412.5 rpm, 10 percent over its rated speed. "We do that to check machine integrity," Dr. de Haas explained. "then we never do it again." After its mechanical soundness has been confirmed, the unit will begin a rigorous course of electrical testing.

At the moment before a TFTR pulse, the MG set's 600-ton rotor will be turning at 375 rpm. When the pulse begins, approximately 50 percent of the energy stored in the set is transferred to tokamak systems. The speed of the rotor drops to 257 rpm, and requires five minutes to regain pulse speed.

The two MG sets for TFTR are nine times as big as the older motor generator sets at PPL. Each has a 600-ton rotor and a 300-ton stator, and can deliver 475-MVA pulses for six seconds at five minute intervals.

Information Meeting

PPL will host an Information Meeting on TFTR/TFET (Tokamak Fusion Test Reactor/Tokamak Fusion Engineering Test) June 24 and 25.

The meeting will describe progress on TFTR, and will detail plans for the development of a strong scientific and technological base for toroidal fusion power development throughout the 1980's. The contributions of industry and other laboratories, both in research and development support on the TFTR design and in work performed on various TFTR subcomponents, will be recognized. The possible roles industry and other laboratories may play in future TFTR/TFET development will also be explored.

The technical aspects of the meeting are being coordinated by Roy Little, with Irene Giersing and Pam Johnson acting as general meeting coordinators. Information Services will provide tours, graphics work, printing and media relations support during the meeting.

Energy Conservation

Increased energy costs and budgetary restrictions will require the continuance of last year's summer energy conservation program.

In accordance with PPL policy, 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 mimimum, and to turn off all units during the night, 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 degree level to conserve the energy necessary to reheat the air.

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

Amnesty Results

C-Site Amnesty Day efforts resulted in an estimated $750 saving in Cafeteria equipment. The anonymous winner of the free lunch scoured his area and returned 73 items. The biggest surprise was the return of over 100 trays from all areas. Although only about one tenth of the lost items found their way home, Amnesty Day results were significant.

Sports Equipment

Afternoon athletes can display their prowess by using recreation equipment signed out through the ERC Recreation Committee. Basketballs, horseshoes, quoits, Frisbees, Bocci kits, badminton equipment, croquet sets, and Frisbee horseshoes are among the items available.

Equipment may be signed out from any member of the committee, but equipment should be reserved prior to lunchtime. It is the responsibility of the individual signing out the materials to see that they are returned.

ERC Recreation Committee members are Mary Ann McBride (New Guggenheim, Room 110, ext. 2590), Steve Ragolia (C-Site Maintenance, Drafting, ext. 3098) and Tom Hurley (Forrestal 1-HA, Steam Plant, ext. 3107). Sports equipment will remain available throughout the summer months.

Cafeteria Committee

A B-Site Cafeteria Committee has been appointed to work with cafeteria management "to improve and perfect their services," according to Human Resources Manager Len Thomas.

Committee members include Chris Gillars, Tom Hurley, Jack Joyce and Flo Short. They will be working with Jim Lawson of the University's Food Services department to provide better service at the University-run cafeteria.

Len urged all employees with suggestions for cafeteria improvements to contact committee members and voice their concerns.

Relocation

The Health and Safety Office has been relocated from the Gas Dynamics Building to Building 1-0. All telephone extensions remain the same.

PPL Picnic

Mother Nature had better be nice to PPL June 19. That's the date of the annual laboratory picnic, which will be held rain or shine starting at 1 p.m.

The day will be filled with games for adults and children, including egg and balloon tosses, a fish pond, pony and hay rides, and much more. Hot air balloon rides will be given on a weather permitting basis.

The picnic is open to all PPL employees, their spouses and their children. Unmarried employees may bring a guest.

Tickets for the picnic go on sale June 7 at the C-Site reception desk, and will be sold through June 18. Ticket request forms are being sent to all employees through campus mail; they should be filled out and returned to Mary Alice Eubank, C-Site reception desk, no later than June 1. NO ONE WILL BE ABLE TO PURCHASE PICNIC TICKETS UNLESS A TICKET REQUEST FORM HAS BEEN RECEIVED.

Ticket prices are five dollars for those 11 years old and older. Children 10 years old and younger will be admitted free.

Earl Thomas is the new C-Site cafeteria manager, replacing Buddy Macrie. The Millstone resident has been with Interstate United for 15 years, and was previously cafeteria manager at the U.S. Postal Service bulk mailing facility in Jersey City.

Cafeteria Hours Changed

In conjunction with the June Information Meeting, the C-Site cafeteria will be open to PPL staff from 11 a.m. to 12:30 p.m. on June 24 and 25. Laboratory employees are requested to arrange earlier lunch hours on those days.

Patent Program

PPL now has a Patent Awareness Program, as well as a Committee on Inventions, to increase patent awareness of laboratory staff. Five invention disclosures were filed with the committee during April:

- Device for Supressing Plasma Tearing Instabilities, by Allan Reiman
- Enhancement of Thermonuclear Reactor by Polarizing the Plasma Ions, by R. E. Valeo, H. Furth, M. Goldhaber
- Movable Uranium Rods and Stringers for Reactivity Control of Fusion Reactor Blankets, by D.L. Jassby
- Current Drive with Oscillating Resistivitity, by N.J. Fisch
- Spectral Filters for Collimated Fast Neutron Beams from Magnetically Confined Reacting Plasmas, by D.L. Jassby

For further information about the committee or the program, contact committee secretary Nancy Jones at ext. 2659.

Correction

An article on health insurance in the February 22, 1982 HOTLINE contained an error in the second paragraph. The sentence should have read:
As a Medicare recipient, you are no longer eligible for *primary* Blue Cross/Blue Shield programs.

Tennis Picnic

PPL tennis buffs can measure each other's "net worth" during the third annual PPL Divisional Tennis Tournament, scheduled for June 12 at the Princeton University tennis courts.

Each tournament entrant will be assigned to one of four teams, representing the Administrative, Engineering, Experimental or Theory divisions of the lab. Team captains will arrange team members according to their ability, and each team will field at least four singles players and one or two doubles teams.

Each team will play once in the morning and once in the afternoon during the tournament. The team winning the most individual matches (two out of three sets, or whoever is ahead at the end of the 75-minute time slot) wins the round.

The tournament is open to all PPL employees and their relatives, and players of all abilities are encouraged to participate. A barbecue lunch will be available beginning at 11 a.m.

To enter the tournament, contact Marilee Thompson (ext. 3422) or John Edwards (ext. 3305) by June 10. Each entrant must bring four dollars and one can of new yellow tennis balls to the tourney.

The rain date for the event is June 13.

Housing Help

The PPL Housing Program needs accomodations for temporary visitors to the lab. If you have rooms to rent or a house to sublet, and would like to rent to a laboratory visitor, please contact Meg Gilbert, Personnel, at ext. 2036.

Screening Results

Approximately 134 employees were found to be "high" during blood pressure screening conducted in conjunction with the new ID badge program recently.

Data compiled by Dr. Ernst de Haas revealed that out of the 750 people tested in the voluntary screening, 134 had readings in the "high" range (150 and over diastolic/95 and over systolic). An additional 100 employees were found to be "borderline" cases (140-149 diastolic/90-94 systolic), while 516 employees were found to have normal blood pressure readings. Dr. de Haas added that the distribution of readings is approximately the same as that for the general population.

The employees who tested above normal are being asked to have their blood pressure rechecked, according to Dr. de Haas. "A single blood pressure check serves only to separate out the normals," he explained. "Of the 234 borderline and high read-

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ings... perhaps as many as 30 to 50 percent will be found to be false positives on a recheck." The "true positives" (those with high readings on a recheck) will be urged to see their doctors for treatment.

The screening represents the first step toward what may become a continuing preventive medicine program at PPL. Employees would be checked to spot early signs of heart disease, cancer and stroke, the three diseases which account for 80 percent of the deaths in the United States. The free screening, which would include blood pressure and height versus weight checks, would eventually become mandatory.

Workers Compensation

The University carries Workers' Compensation insurance for employees who are injured during the course of an in a manner directly relating to their work.

If an employee is injured at work, an accident report MUST be filed *immediately* with the Health & Safety (H&S) Branch. It is the employee's responsibility as the injured party to fill out the report and submit it to his *immediate* supervisor. If the employee is unable to complete the accident report, however, it becomes the supervisor's responsibility to see that the report is filed. All departments should be sure to have a supply of blank accident report forms on hand; additional copies can be obtained from Health & Safety.

After the accident report is completed, the supervisor should sign it and send it to H&S. If the supervisor does not agree with the statements in the accident report, he should attach a memo that notes any discrepancies or comments.

After the form is processed by H&S, it is sent to the PPL Personnel Office. Personnel then submits the form to the laboratory's insurance carrier.

Once an accident report is received by Personnel, the employee will be notified and given instructions for submitting medical bills.

The determination of whether or not an accident is work-related is made by our insurance carrier, based on information provided in the accident report as well as their own evaluation. No bills can be paid until this whole process is completed .If it is determined that an injury or illness is not work-related, the employee will be notified and any medical bills will be returned to the employee. He can then submit the bills for payment through any other health insurance he may have.

Further questions on this benefit should be directed to Mary Bersch, PPL Personnel Office, ext. 2043.

Golf Tournament

Approximately 80 golfers tee'd off when the Princeton University Golf League held its season opening spring tournament April 21 at Forsgate Country Club.

Gene Evans carded a 69 to win the low net portion of the tournament, followed by Elmer Perontoni in second place with a 70. In the closest to the pin competition, Larry Dudek won on the front nine with a 12'6" placement; Bob Mosley was second. Bob Kern took first place on the back nine, coming 3'0" away from the pin, and Hoyt Masterson was second.

The seventh hole was the longest drive hole for tournament competitors. Bill Snead had the longest drive for golfers with handicaps from 0-8; Marian Shupsky won for the 9-12 handicap division; and Jerry Gething placed first in the 13 and over handicap section.

Door prizes of golf balls, golf towels and umbrellas were also awarded.

Regular league play began May 3 at the Princeton Meadows golf course. Anyone interested in substituting for the league should contact Bill Ernst at ext. 2438.

Singles Social

The Princeton University League's monthly singles wine and cheese social will be held June 10 at 5 p.m. in the Fine Tower faculty room on main campus. All single members of the University faculty and staff are invited to attend. For further information, contact Naoma Dorety at 272-4097.

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 Information Services, Module 2, C-Site, James Forrestal Campus, ext. 2754.