



HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

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Remote Handling

An agreement between the U.S. and Canada has resulted in the reactivation of the TFTR remote handling program. The program's major goals are to provide a limited remote handling capability for TFTR by 1989.

As it was originally conceived and designed, TFTR was to be completely compatible with remote handling. Funding restrictions curtailed the remote handling program, however, and TFTR was completed with no further remote handling considerations. The machine will not require remote handling until 1989, when deuterium and tritium (D-T) will be used to create numerous plasma discharges.

"The TFTR experimental program has been laid out with two major milestones," explained Technical Systems Division Head Roy Little, whose division is responsible for the remote handling program. "The first is putting deuterium and tritium into the machine for the first time, which should occur near the end of 1986. This will cause the machine to become slightly radioactive, but the number of plasma shots with D-T has been deliberately restricted so that remote handling will not be needed. TFTR will then be modified with new pieces of hardware and new capabilities, such as lower hybrid current drive and an ion cyclotron radio-frequency (ICRF) system - both of which must be designed with remote handling in mind. We will test the new components in deuterium-tritium again in 1989; at that point, there will have been sufficient D-T plasma shots to activate TFTR to a level where no hands-on maintenance will be possible near the

PBX FIRST PLASMA

The Princeton Beta Experiment (PBX) reached a major program milestone April 10, when it created and maintained a kidney-bean-shaped plasma for one second.

Project co-head Michio Okabayashi said there were indications that PBX could create bean-shaped plasmas as early as April 7. It wasn't until April 10, however, that PBX created a 400 kA plasma with a magnetic field of 1.1 tesla and a density of 3.5×10^{13} particles/cm³. These parameters represent approximately 60 percent of PBX's design value. The ohmic plasma had an indentation of 20 percent, about 80 percent of PBX capacity.

"So far, we've been quite pleased with the PBX performance," Dr. Okabayashi reported. "We expected that it would take more time before we got good kidney-bean shaping, but so far, so good - excellent, actually!" He added that the program is continuing "right on schedule."

The next step in PBX experimentation calls for injecting neutral beams into the plasma. Since the neutral beam system has not been run since PDX was converted to PBX, a cleanup period will be required to prepare components such as the surface limiter for return to duty. The cleanup, which involves bombarding PBX surfaces with high-energy particles, is expected to take about two months.

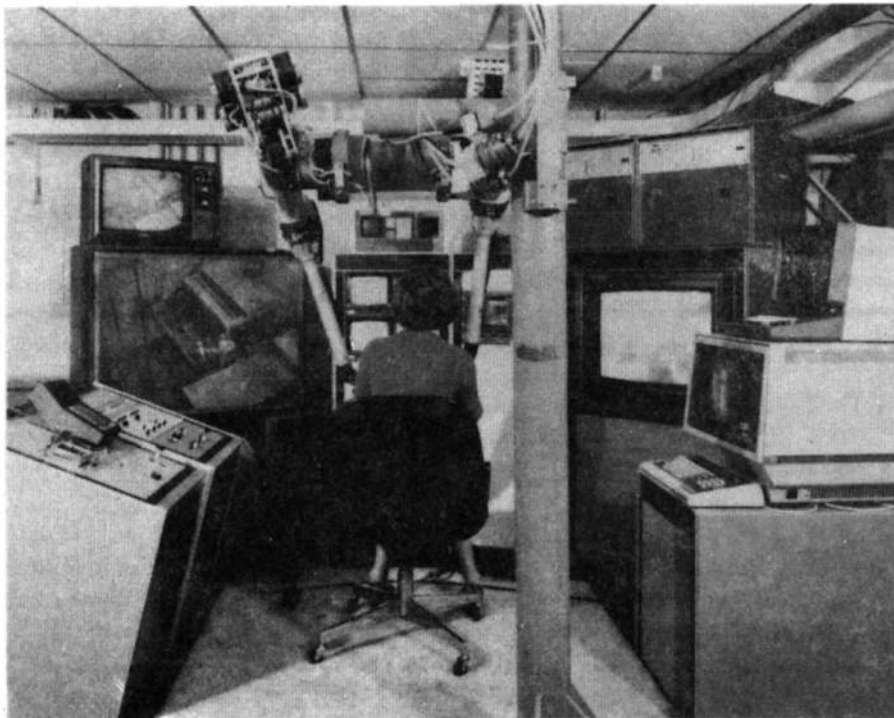
Dr. Okabayashi predicts even better results from PBX once neutral beam injection begins. "We've had a very good target plasma for neutral beam injection so far," he explained, "and I expect we'll get preliminary results on magnetohydrodynamic stability before the summer."

The PBX configuration should theoretically permit formation of stable plasmas with beta values exceeding 10 percent.

machine. We'll have no option but to use remote handling to do any modifications or repairs."

The current program involves an intricate collaboration between the United States and Canada. The plan will provide Canada with high-tech design and fabrication experience; spinoffs also seem likely. The United States will receive TFTR remote handling components at a reduced cost through its participation in the program.

The three-phase program began in September 1983; the first phase is expected to conclude this fall. During first phase activities, four Canadian remote handling engineers were "loaned" to PPL for a year. Team leader Clive Holloway and Thomas Szirtes came here from SPAR Industries Ltd., Toronto; Michael King works for CAE Electronics of Montreal; and Jeff Stringer is employed by DSMA Limited, Toronto. PPL also "rented" engineer Donn Burgess from the Hanford



An operator sits at the control console of a master slave manipulator during testing at Oak Ridge National Laboratory. A similar system, built by Tele-Operator Systems, is currently being modified at Oak Ridge for future use on TFTR.

Engineering Development Laboratory in Washington State to help coordinate the technical aspects of the remote handling team's work.

The scope of the program has been greatly scaled down from the original concept. Rather than attempting to provide remote handling capability for every TFTR component, the program will be limited to those components likely to need changing in the course of TFTR's lifetime. "We're assuming that the coils, the vacuum vessel, and the basic structure of the machine will remain reliable and will not have to be remotely handled," said Roy.

The program will focus on items or materials likely to require repair, maintenance, or alteration during the TFTR experimental program. As an example, remote maintenance will be provided for vacuum vessel port covers, which may require alteration due to changing diagnostic needs, new vacuum vessel penetrations, or leaks.

Components within the vacuum vessel are also candidates for remote maintenance efforts. Protective armor,

graphite tiles, and limiter panels are likely to be damaged by continual exposure to the plasma environment.

"The predicted failure rates on ion sources for the neutral beams is high," Roy explained, "so we're looking at those. We're also working with water, gas, and instrumentation connectors -- anything that can be fixed in a reasonable time. It's not our intention to attempt repair of something that will cause TFTR to be down for two years, for example. We'll be making changes efficiently to minimize down time."

At present, the remote handling group is emphasizing testing with realistic demonstrations. The M-3 mockup has been relocated from the 1-H Building to the TFTR mockup area, where components such as tiles and bumper limiters are being installed within it. The group will then simulate repairs they may be called upon to make. "We're trying to do things in a realistic fashion," Roy emphasized, "so we can find out what the problems we're facing are."

In June, the team will conduct a

hands-on drill involving the removal and replacement of tiles within the mockup. Full protective clothing will be worn by technicians involved in the test, and a "clean tent" will surround the entry port. Technicians will remove an access port cover, enter the vacuum vessel, replace the "damaged" tiles, and replace the port cover as they leave the vessel. The test will establish a basic timeline for the removal and reinstallation of tiles in TFTR for the 1986 to 1988 period.

The first master slave manipulator unit should be delivered to the laboratory this fall. Built by Tele-Operator Systems, the unit is a general purpose dexterous arm slave manipulator. Oak Ridge National Laboratory is currently modifying the unit to make it more compatible with TFTR remote handling requirements. By the end of the year, the remote handling team expects to have removed and replaced tiles, access port covers, and surface pumping panels in the mockup using various remote controlled devices as part of its conceptual design and demonstration efforts.

Toward that end, the team has been assessing how extensive PPL's remote handling effort should be. Team members are also involved in conceptual design, and are organizing the program for the start of phase two activity -- preliminary and final design work that will result in a limited remote handling capability for TFTR. The second portion of the program is expected to last approximately four and a half years, and to cost a total of \$30 million.

Canada will be allocating \$10 million, approximately one-third of the total project. The U.S. DOE will provide an additional \$10 million to Canada, whose government will work mainly with Canadian industries to complete equipment design and fabricate components. PPL will be permitted to keep the completed components.

The final one-third of the project monies will be given to PPL by the DOE. These funds will pay for the staff to manage the total project (including the Canadian phase), as well as for identi-

fying items to be modified to accommodate remote handling. A non-Canadian company will be selected to design and build a portion of the required hardware, such as the ex-vessel manipulator.

The technical timetable for the project calls for conceptual design development and demonstrations of particular critical tasks and functions during 1984. Detailed design work will begin in 1985. At that time, industrial vendors will design the items the program requires, building and delivering them to PPL for testing by 1988.

The remote handling program is attempting to move toward robotics, with computer-controlled mechanisms performing relatively sophisticated tasks. "In 1989," Roy points out, "anything in or near the TFTR vacuum vessel will become completely off-limits to people. It's quite a complicated matter to build a remote handling machine that will crawl inside a port, do its job, and crawl out again!"

Roy admitted that such a machine is currently beyond the state of the art in robotics. "We're hoping new breakthroughs in robotics will help," he said, "since we're going to need more

complex controls, more sophisticated sensors, and quite sophisticated systems to be able to do the required work. We'll be dealing with items ranging from small bolts to heavy components, and we'll have to be able to fully inspect a site before we do any repairs or alterations to it. It's one of the frontiers of TFTR; and of course, any remote handling mechanism can't be allowed to fail -- how would you retrieve it? This means we have to think our problems and solutions through very carefully, and develop a whole new area of expertise at the laboratory."

Third phase activities will involve formulation of a plan for decommissioning TFTR at end-of-life. The plan will specify decommissioning equipment needed, precautions and methods for handling tritium-contaminated components, and the logistics of transporting and disposing of material. The "outfitting" of the TFTR Hot Cell for processing the scrap hardware will also be part of phase three goals.

The Canadian members of the team will be leaving at the end of 1984, returning home to work on the Canadian phase of the project. PPL will be seek-

ing a new group of technical coordinators to act as project liaisons between the U.S. and Canadian teams. "We intend to get these people from U.S. national laboratories," Roy says. "We're in the investigation stage of getting those individuals now."

Roy feels the advances made in developing TFTR remote handling will almost certainly be applied to TFCX. "We're going to learn a lot that can be applied there."

Telephone Trouble

If You're not careful when answering you're cordless telephone, it could give you a pain in the ear.

The U.S. Consumer Product Safety Commission, in conjunction with the Electronic Industries Association, has issued a consumer alert on cordless telephones. If the receiver unit is not in the talk position when placed to the ear, the phone will continue to ring -- producing a loud, and possibly painful, ringing in the ear.

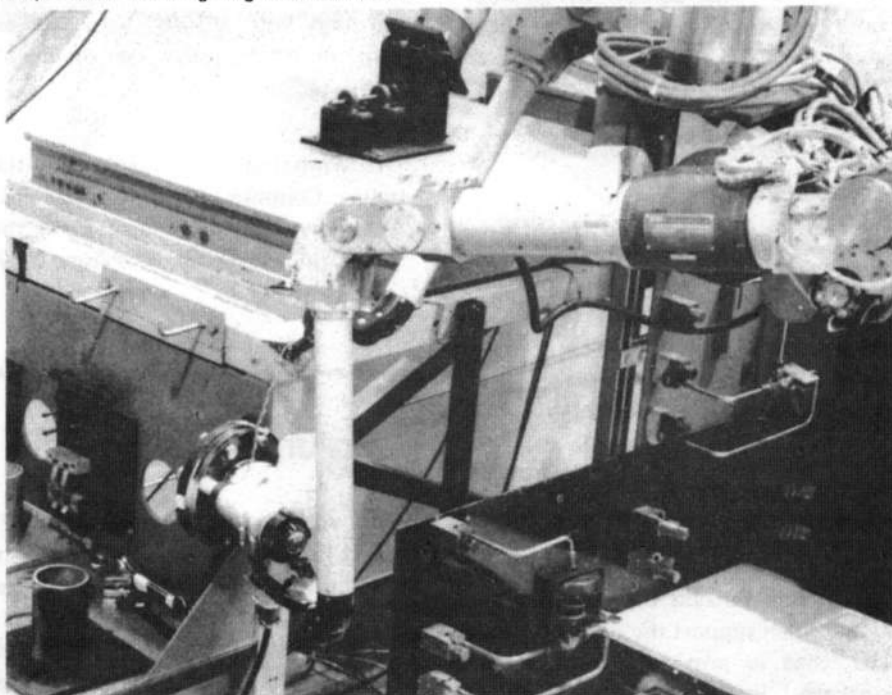
Consumers are advised to read the operating instructions that come with the telephone, and to familiarize those who use the phone with correct operating procedures.

FOR SALE

19' fiberglass boat, with 85 hp. motor and trailer. Sleeps four, has sink and head. Everything in first-class condition; asking \$5,000. Call Dr. DeHaas, ext. 2290

FOUND

A radio-controlled airplane, found near the end of the Forrestal runway. To claim it, contact Terry McFarland at 201-946-8161 and describe the plane correctly.



A close-up view of a remote manipulator arm. An operator monitors the arm's movements on viewscreens in a remote control room. (Both photographs courtesy of Oak Ridge National Laboratory)

PPL Picnic

Mother Nature had better be nice to PPL June 23. 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, and a fireworks display will conclude the evening's entertainment.

The picnic is open to all PPL employees, their spouses and their children. Single employees may bring a guest.

Picnic ticket request forms have been mailed to all employees. Staff at C- and D-Sites should return their request forms to Dolores Mazalewski, C-Site, B333A. Employees at A- and B- Sites should send their completed forms to Bobbie Cruser in Sayre Hall, Room 210. **NO ONE WILL BE PERMITTED TO PURCHASE PICNIC TICKETS UNLESS A TICKET REQUEST FORM HAS BEEN RECEIVED.**

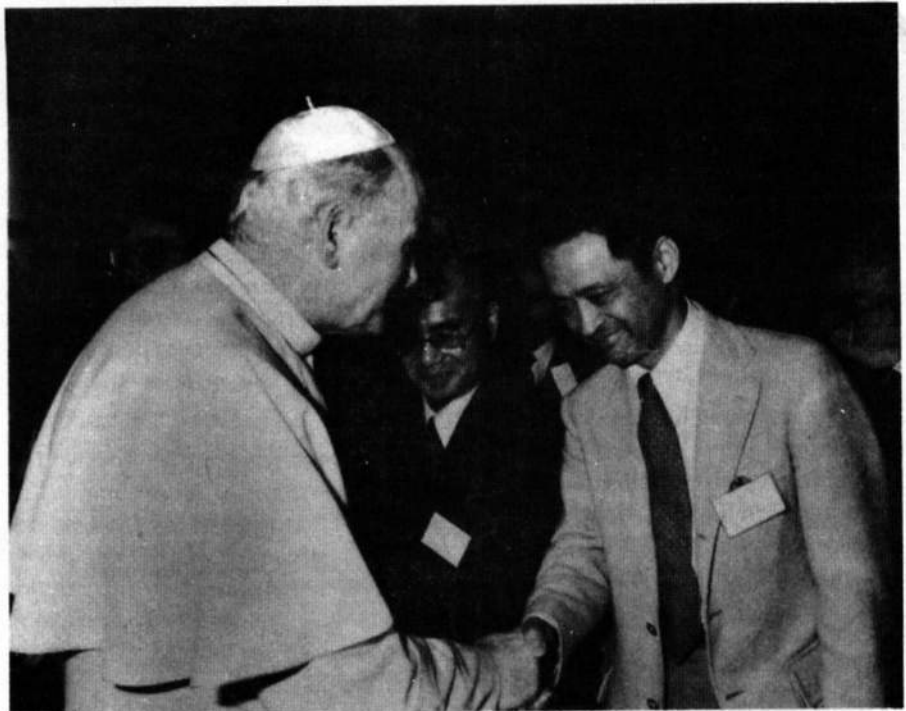
The deadline for submitting ticket requests is June 11; tickets may be picked up between June 11 and June 18. Tickets for A- and B-Site employees will be available from Meg Gilbert or Bobbie Cruser at Sayre Hall during working hours. Tickets for C- and D-Site staff will be available from Dolores Mazalewski from noon to 1 p.m. daily at the C-Site reception desk.

For further information about the picnic, contact Bobbie Cruser at ext. 2101.

Inventory

During the first two weeks in June, assigned staff will be conducting the DOE-required Annual Inventory of Records Holding. They will enter all offices and estimate the quantity of records by drawer-full of the file cabinets only. If office occupants are not present, the staffperson is authorized to open the file cabinet drawers briefly to make the estimate.

Papal Audience



Dr. T.K. Chu of PPL was one of several laboratory physicists who were greeted by Pope John Paul II during a papal audience in March.

Several PPL staff members were among those granted a special audience with Pope John Paul II during the Fourth International Symposium on Heating in Toroidal Plasmas, held recently in Rome. In addition to Dr. T.K. Chu, Drs. R. Fonck, R. Hawryluk, J. Hosea, H. Hsuan, F. Perkins, and R. White attended the audience.

The Pope told his listeners that "your research can indeed have a great importance for the future of humanity. For, as you emphasize, the quality of the environment and of life, the production of food and, in certain cases, the very survival of man, depends upon the long-range availability of sufficient energy."

The Pope added that "your activity has effects outside the different nations which support the research. You are called to provide an example of successful international collaboration among the peoples of the earth. By its very nature, your work must be

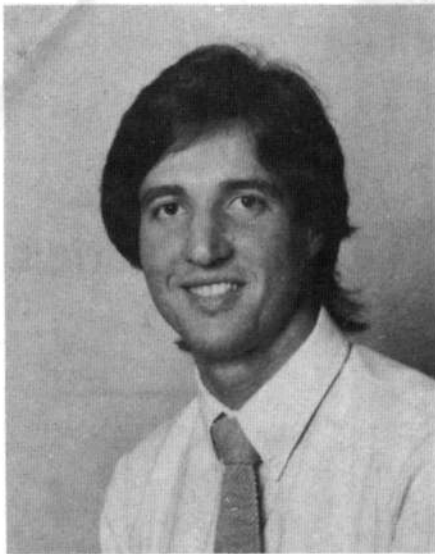
aimed towards the peaceful future and the harmonious and fraternal development of man, of each individual human being. For it is to the human person that your efforts, your studies, your research must be directed."

The Symposium was organized by the Italian Commission for Nuclear and Alternative Energy Sources, and the International School of Plasma Physics.

Volunteers Sought

Have you become a "people person?" **HOTLINE** has been featuring its "Volunteers: People People" for over a year. If you've gotten involved in a volunteer activity, we'd like to know. Drop us a line about your experiences, or call Kathy Dunn at ext. 2754.

Congressional Fellow



Dr. Ralph Izzo has been selected as an American Physical Society (APS) Congressional Scientist Fellow for 1985. He is one of two Fellows chosen by the APS.

The Congressional Scientist Fellowship program was established to apply the expertise of American scientists to public policy issues. During their one-year appointments, Fellows research a variety of scientific subjects for the senator, congressman, or congressional committee to which they are assigned. Their technical research is used in preparing position papers and briefings.

"It gives you a chance to step back and see how science and the rest of society relate," Dr. Izzo explained, "and, in particular, to learn how research policies are formulated."

Scientists interested in receiving Fellowships must submit a letter of intent to the selection committee, discussing their activities in areas of community interest. Applicants choose a topic of public need or concern (such as education, in Dr. Izzo's case), and must demonstrate how they have addressed that need. Letters of recommendation are also required, as are mock briefing

sessions before a panel of eight physicists to simulate Fellowship job conditions.

Dr. Izzo will travel to Washington in September for a Fellowship orientation session. Fellows then submit a list of preferred assignments; Dr. Izzo would like to work with a New Jersey senator. Final assignments are made by the program's selection committee.

Born in Brooklyn, N.Y., Dr. Izzo moved to Plainsboro two years ago. He earned a B.S. and an M.S. in mechanical engineering from Columbia University, receiving his Ph.D. in mechanical engineering and applied physics from Columbia in 1981. He joined the laboratory as a staff physicist that same year, and is currently working on nonlinear three-dimensional resistive magnetohydrodynamic studies.

Dr. Izzo will take a one-year leave of absence from PPL while serving his Fellowship appointment.

Softball Signups

Players are needed for PPL's entry into the 32-team Princeton Businessmen's Industrial Softball League, according to team organizer Tom Holoman. The league has been split into divisions, with PPL's team competing against slo-pitch squads such as RCA, FMC, and other area research or industrial firms. PPL finished last season with an 11-10 record.

Teams consist of between 15 and 20 members. The PPL team will play Tuesdays at 6 p.m. beginning May 1. All home games are played at the softball field near the airstrip, and spectators are urged to attend the games and cheer the team on. A schedule of home and away games will be posted throughout the laboratory.



You'll be able to recapture the thrills of the winter Olympics during the heat of the New Jersey summer at Six Flags Great Adventure (G.A.). And if you use the 1984 Funseekers cards, now available in Personnel, you can do it economically as well.

New at the park, which is now open daily, is the Sarajevo Bobsled. Propelled downhill by gravity, each bobsled reaches speeds of 40 miles per hour, guided only by high-banked 45 curves. The ride is expected to join Parachuter's Perch, Free Fall, Lightnin' Loops, and Roaring Rapids as one of the park's most popular attractions.

Nor have the junior Funseekers been forgotten; there's a new kid's play park, complete with crawls, climbs, pets, and puppets for the little folks.

Although the G.A. concert line-up is still incomplete, Robert Hazard, the Beach Boys, and Kool & the Gang have already been scheduled to perform at the park. Nature lovers will enjoy the more than 2,000 wild and exotic animals in the Safari Park. Those with a yen for wetter and wilder fun can see the Ski Show on the G.A. Lake.

Your free Funseekers card will save you up to four dollars per person on park admissions throughout the 1984 season. To get a card, contact Meg Gilbert in Personnel, Sayre Hall, B-Site.



Secretaries' Day

A splendid time was had by all at the annual Secretaries' Day festivities held in the C-Site cafeteria April 27. Dee Hurley (right) entertained with her original song "TFTR" and Dr. Harold Furth (below) helped select the winners of four floral door prizes, one of which went to Sonja Patterson (left). The event was organized by the Secretarial and Office Support Staff program committee (above), which includes Debbie Carter, Mary Dyson, Chris Ritter, Helen Livernoche, and Dolores Bergmann (left to right).



Classes Completed



Dr. Ernst de Haas (left) and Dr. Don Grove (right) pose with class graduates H. Puckett, R. Myslinski, R. Jensen, J. Gavrushenko, W. Pointon, and R. Krsnak (left to right).

Nine staff members are more conversant with the mysteries of math and physics since they completed two recent in-house training sessions.

In an April 27 ceremony, Dr. Don Grove presented certificates to R. Krsnak, R. Waszazak, and W. Pointon, all of whom passed their "finals" in "Review of Mathematics." H. Puckett, R. Jensen, J. Gavrushenko, B. Berlinger, R. Myslinski, and G. Northey also received certificates for completing a course on the "Fundamentals of Physics." Both courses ran for approximately three months.

Dr. Ernst de Haas, Training Manager and instructor for both courses, distributed a set of pocket conversion tables to Krsnak, Pointon, Berlinger, Gavrushenko, and Myslinski. He noted that Myslinski had scored 100 points on his final exam, while the other students who received the conversion tables all scored well above average.

Dr. Grove praised both basic training courses and specific lectures for helping maintain a well-trained laboratory staff.

Spring Cleaning



Ray Grimm is forming a library on fusion and plasma physics at the Lucas Heights Research Laboratories in Sutherland, Australia. The new library could particularly use textbooks and conference proceedings — many of which may simply be gathering dust in offices throughout PPL.

Do some springtime 'pruning' of your bookshelves. If you find some volumes that might be helpful to Ray, send them to the PPL Library. The librarians will gather the books and forward them to him.

Softball Squads

Heavy hitters are still in demand by the PPL intramural softball league. Teams will compete every Wednesday or Thursday night during the 10-week season, scheduled to begin during the second week in June.

So far, Engineering, the Warehouse, the RF Sluggers, CICADA, and the Theory Division have all fielded teams. Two more squads with a minimum of 11 players are still being sought. The league is co-ed, and interested individual players can call Frank Wasiowicz (ext. 3568) or Hank Moreau (ext. 2093) to be placed on a team.

Van Pool

Space for one or two persons has become available in the van pool operating between Mt. Holly and PPL. Stops are made in Burlington, Florence, and Bordentown. The van arrives at PPL at 7:30 a.m., and leaves daily at 4:30 p.m.

For further information, contact Gene Colborn at ext. 3683, or Bob Reed at ext. 2558. Save wear and tear on yourself and your car by riding in the van pool!

Card Reader Relocation

As a result of a safety report filed by the Department of Occupational Medicine and Safety, the Security Department will remove card reader 1 from its present location at the first floor CS hallway.

In order to remain within Life Safety Code guidelines requiring two accessible exits from any area, the card reader will be relocated to the double door entrance near the intersection of the C-Site lobby and the hallway entrance to the shop wing. Questions concerning the relocation should be directed to the Security Department at ext. 2894.

Sports Camps

1984 PRINCETON UNIVERSITY SUMMER CAMPS

Camp	Dates	Sex	Age	Cost	Camp Director
Baseball	July 29 - August 3	Male	10 - H.S. Jr.	\$225/Overnight	Thomas O'Connell
	August 5 - 10	Male	10 - H.S. Jr.	\$170/day	
Squash	June 21 - 24	Coed	Adult	\$375/Overnight \$265/Day " "	Bob Callahan
	June 24 - 30	Coed	10 - H.S. Jr.		
	July 8 - 14	Coed	10 - H.S. Jr.		
	August 2 - 5	Coed	Adult		
Tennis - (For Tournament Training)	July 22 - 27	Coed	Adult	\$375/Overnight	David Benjamin
	July 29 - Aug. 3	Coed	10 - H.S. Jr.	\$265/Day	
Women's Basketball	June 24 - 29	Female	10 - H.S. Jr.	\$195/Overnight \$145/Day	Jeanne Foley
Women's Field Hockey	July 29 - August 3	Female	10 - H.S. Jr.	\$200/Overnight \$155/Day	Betty Logan
Women's Soccer	August 12 - 17	Female	10 - H.S. Jr.	\$225/Overnight \$170/Day	Bob Malekoff
Women's Softball	July 15 - 20	Female	10 - H.S. Jr.	\$195/Overnight \$145/Day	Cindy Cohen



Sports fans of all ages will be flocking to Princeton this summer to participate in a variety of sports camps, sponsored by the University's Center for Visitors and Conference Services, Department of Services.

The camp program is open to everyone, although only the squash and tennis classes are coed. Most of the camps, which cover a variety of sports, run for six days. Four-day courses in

squash are available, however.

Registration for each camp must be made two weeks before the first class. "Campers" may attend daily sessions, or choose to live in an on-campus dormitory room for an additional charge. The schedule of camp sessions is listed below; for further information on registration, call the CAMP HOT-LINE at 452-3369.



Propane Pointers

As warmer days become the rule rather than the exception, many of us will heed the call of the open road in a recreational vehicle (RV). But the road can turn deadly if the propane used for most RV cooking and heating leaks into the vehicle itself. The gas, which is heavier than air, can settle near the floor of an RV. The pilot light on a stove or the spark from an electrical appliance can ignite it, causing an explosion and fire. Propane gas can also leak through the floor of an RV, and be ignited by the heat of a towing car's muffler and exhaust system.

Before hitting the highways, consider checking your propane system by:

- Installing an automatic gas-leak detector in your vehicle. Available through RV outfitters, the device sounds a loud alarm if propane gas is detected inside the RV.
- Using an automatic changeover regulator on the propane tank itself. In addition to switching the fuel feed to a full tank after one is emptied, the regulator controls the pressure inside the propane lines as well.
- Turning off the tank valve and extinguishing all RV appliance pilot lights. Check the tank pressure before leaving and after arriving at your campsite. If there's been a pressure drop, there's a definite leak in your system.

Since most leaks occur in transit, all propane feeds should be shut off at the tank while traveling. Carry the tanks outside your RV if possible; if not, be sure to provide adequate ventilation. When refilling the tanks, never fill them beyond 80% of their capacity, since the gas requires expansion room.

By taking a few moments to examine your propane system now, you can ensure a full season of RV safety.

Volunteers: People People

May has been designated National Volunteers Month. Volunteering is something we can all do to help improve our communities. It doesn't cost a cent, or increase taxes a bit. It will pay off in much-needed aid for a variety of organizations, and in a wealth of satisfaction for you. Choose an activity from the list below, or contact your nearest Voluntary Action Center (VAC) for ideas. But however you do it, lend a hand!

The following listings were provided to the HOTLINE by the Voluntary Action Center of Morris County. For further information on any activity, please call the VAC at 201-538-7200.

- An outreach program needs hotline volunteers in several areas to handle crisis telephone calls. Sign up for the time that best fits your schedule. All volunteers will receive a 15-hour training program to prepare them to handle the diverse requests the hotline receives.
- A group of two-to six-year-old children living at a special school for the handicapped need the TLC that you can provide. Volunteers are needed to read to and play with the children at a variety of times. An orientation program is available at the school.
- The sound of music comes from the young professional music group that entertains at the monthly psychiatric ward party at a nearby hospital. The party is held on the fourth Wednesday of each month, with transportation available to and from Madison. Grab your guitar and strum along!
- The Board of Directors of a national women's health center is seeking a new member for their budget committee. Meetings are held once a month (except summertime) at members' convenience. Financial experience is necessary to review budget reports and advise the full board for action.

● Tutors are needed for men wishing to qualify for a high school equivalency degree. One-on-one tutoring sessions (primarily in reading) are held Monday or Tuesday evenings from 7:30 p.m. to 9:30 p.m. Training or teaching experience is helpful.

● Committees are being formed to further the awareness campaign of an alcohol prevention task force. Volunteers interested in the subject can join one of these committees, which include education, legislation, treatment, and publicity. The organization's office also needs secretarial help.

Canal Bridge

At last, the proposed Delaware & Raritan Canal Bridge at the Millstone aqueduct may become a reality!

After almost five years of negotiation among the myriad agencies involved (including the Canal Commission, Parks Commission, Corps of Engineers, Coast Guard, Environmental Protection Agencies, agencies for the handicapped, flood protection agencies, and others), agreement on a design has finally been reached. Construction bid packages are now in preparation and, barring unforeseen problems, construction should start late this summer. PPL bikers, joggers, and walkers should have use of the bridge next summer.

The aqueduct is located behind the Holiday Inn near the concrete footpath.

FOR SALE

Colonial dining room set: table, four chairs, buffet with upper hutch. All solid pine. Call Tony DeMeo, ext. 2755.

TRANSITIONS

BORN — To Larry Nixon (PPL Computer Room USC) and his wife Joyce, a daughter, Lauren Danielle, on April 2. Congratulations!

Job Lottery



Selecting the successful summer job applicants was the responsibility of (left to right) Bobbie Cruser, Dolores Bergmann, Marilee Thompson and John Anastasio.

You'll see a lot of new faces throughout the lab this month, as the successful applicants in this year's summer job lottery begin their duties.

According to Bobbie Cruser, Assistant to the Director of Personnel, approximately 150 applications were received by the summer youth employment program from individuals whose parents work at PPL. Princeton University students on financial aid received first preference for the available positions, followed by college students with technical abilities in fields such as computer science, physics, or engineering. Nontechnical college students and high school students rounded out the priority list.

The family names of all applicants were entered on lottery disks, along with the number of children seeking positions. "That way, every family had one chance," Bobbie explained, "rather than a family with four chil-

dren having four chances." Once selections for the 100 job openings were made by Bobbie, John Anastasio, Marilee Thompson, and Dolores Bergmann, families of successful applicants were contacted. In cases where a family had made multiple applications, the family chose which child would receive the position.

A group of technical summer positions are available, but these jobs are filled based on skill qualifications, not on the lottery system. Bobbie added that a number of applications were received from individuals with no ties to PPL. These applications may be considered if openings exist after the second round of the lottery.

Patents

Fifty-five PPL inventors and their guests were honored at the annual PPL Patent Awareness Program recognition dinner, held April 26 at Prospect House.

The Patent Awareness Program was established in 1981 to recognize creative inventors, and to raise the patent-mindedness of laboratory staff. A Committee on Inventions, consisting of chairman John Johnson, secretary Nancy Jones, and members Frank Bennett, Carl Osgood, Schweickard von Goeler, and Richard Rossi, makes cash awards to inventors for their new or novel ideas. Additional monies are awarded if DOE files a patent application on the discoveries.

Two patents have been awarded to PPL inventors thus far this fiscal year. The patent for "Carbon Coating by Electrophoresis for Controlling Metal Surface Effects" went to J. Timberlake, S. Cohen, D. Manos, R. Moore, and D. Ruzic on November 8, 1983. George Sheffield and Harold Furth were given a patent on February 7, 1984 for "Modular Low Aspect Ratio-High Beta Torsatron."

Invention disclosures filed since December include:

- Rotating Indented Limiter, by S. Cohen, J. Timberlake, and J. Hosea.
- Generation of X-Ray Lasing Action in Confined Plasma Column by Picosecond Laser, by S. Suckewer.
- External Pusher Coil Stabilizer for High-Shear Torsatron, by J. Johnson and G. Rewoldt.
- Steady-State Maintenance and Current Drive of Spheromaks by Continuous Pumping by A. Janos.
- Liquid-Metal First-Wall/Blanket for Magnetic Fusion Reactors, by H. Furth, D. Post, D. Jassby, and M. Yamada
- Ion and Atomic Beam Limiter Conditioning, by D. Mueller and L. Grisham.

- E B Ion Mass/Energy Spectrometer, by S. Medley, R. Kaita, and A. Roquemore.
 - TFCX Vacuum Window, by J. Goree and B. Blanchard.
 - Transport Reducing Vertical Field Coil, by H. Mynick.
 - Push-Pull Circuit with Integrated Transition to Waveguide Output Terminal for Use in ICRF Plasma Heating Equipment, by W. Bennett.
 - Enhancement of Stellarator Confinement by Operation at Ambipolar Potential, by H. Mynick.
 - Ground Monitoring Device by G. Cutsogeorge, M. Viola, and R. Woolley.
 - Electro-Magnetic Transparent Electrostatic Faraday Shields by D. Hwang, C. Fortgang, and J. Hosea.
 - Plasma-Deposited Hydrogenated and Deuterated Amorphous Semiconductors for First-Wall Materials and Coatings in Polarized Fusion Reactors, by H. Greenside, R. Budny and D. Post.
 - Practical Access to Very High Beta Shaping, by M. Chance, S. Jardin, T. Stix, R. Grimm, J. Manickam, and M. Okabayashi.
- For further information about invention disclosures or the patent process, contact Meg Harmsen at ext. 2659.

Health and Safety Training

The following Health and Safety courses have been scheduled for June:

Confined and/or Oxygen Deficient Spaces	K. Semel (x2531)	June 14, 1-3:30 p.m.
Ventilation	K. Semel (x2531)	June 21, 1-3:30 p.m.
Lower Back Injury Prevention	M. A. McBride (x3648)/ L. Owen (x3533)	June 5, 12:30-4:30 p.m.
Fire Extinguisher Training	S. Larson (x3166)	June 12, 26, 2-3:30 p.m.
Cardiopulmonary Resuscitation (CPR)	G. Tompkins (x2459)	June 18, 20, 22 9 a.m. - Noon or 1-4 p.m.
Self-Contained Breathing Apparatus	S. Larson (x3324)	June 26, 9:30-11:30 a.m.

Employees must obtain their immediate supervisor's permission to attend any of these courses. Supervisors must call the responsible instructor to enroll their employees.

Area Safety Coordinator Program

In response to the need for a concerted safety effort at PPL, the Area Safety Coordinator (ASC) program has been instituted on a laboratory-wide basis.

The ASC concept was first tested on a trial basis in the Administrative Department Maintenance Division three years ago. Ray Pressburger and Tom Hurley were requested to initiate a safety program for the 150-man operation. It was found that a combination of meetings, inspections, and local coordination of safety provided a very successful mix. The program was adopted for the entire Administrative Department two and a half years ago. After additional refinements, and with the help of Jean Hurley and Scott Larson, the ASC program now includes the entire laboratory community.

The cornerstone of the program is the involvement of all PPL personnel in making the laboratory a safer place to be. It designates safety as a line responsibility; work can be delegated, but never safety. All employees are expected to work toward improving their own safety awareness, while striving to make PPL's safety record competitive with those of other national laboratories. PPL's future may very well depend on how safely it can work.

The ASC program has received 100% backing from laboratory management, as well as the support of the Department of Energy. In fact, the program came under DOE review during the last PPL audit, and was accepted in its entirety.

The ASC program provides a designated safety official for each area -- Robert Smart for Administration, Ellis Simon for Technology, and David Ignat for Research. These officials select area safety managers and coordinators for their areas of responsibility.

The program is structured to allow those who are closest to the day-to-day operations (the coordinator and the manager) to oversee the safety of specified areas. In this manner, problems can be corrected before they have a chance to become crises, and follow-up examination to verify violation correction is made easier.

The number of yearly inspections, safety meetings, and meeting topics are specified in the ASC plan. Managers and coordinators are responsible for conducting inspections during the first two weeks of designated months, with meetings held during the last two weeks. This timing is designed to allow discussion of inspection reports, or of a topic specifically relevant to an area, in addition to the prescheduled meeting topic.

Regular meetings also provide a forum where employees can bring safety concerns to the attention of the ASC or their manager. Employees are also encouraged to use the Safety Action Memo (SAM) or inform the ASC directly about any safety problems they may encounter. Imminent hazards, however, should be reported directly to the occupational Medicine and Safety Department for action.

Enthusiastic ASC's are vital to the success of the program. They are the people involved most closely with safety through daily contact with the workforce. Ongoing training programs are available to the coordinators, as are a variety of manuals, posters, and other resources.

The importance of the Area Safety Coordinator program cannot be overestimated. Coordinators serve as the eyes and ears of a concerned management, whose goals are to work efficiently and quickly -- but above all, safely. Since coordinators cannot be everywhere at all times, however, it's up to each of us to become more safety

conscious. We must think of safety not as something we make time for, but as an integral part of our lives.

It's not hard to become safety-minded. Safety, after all, is mostly a matter of common sense -- something we all feel we have. But if that's so, why do we take precarious perches when reaching, rather than using a safety-approved ladder? Why do we allow paper, trash, and other refuse to pile up in our workplace, creating potential fire hazards?

The answer lies in the belief that "it won't happen to me." Sure, we all know the safety rules: we've heard about the correct methods of lifting, the importance of grounding electrical equipment, and the necessity of using the right tool for the right job. Most of us are aware of the increased danger potential of disregarding these rules. But accidents only happen to "the other guy," so we keep on breaking those rules for our own convenience or comfort.

It's important to realize, however, that each of us is "the other guy" to someone else. Laws of probability can be just as implacable as the laws of nature; those accident statistics are bound to include us "other guys" sooner or later if we continue to commit unsafe acts or follow unsafe procedures.

The goal of the lab-wide Area Safety Coordinator program is to provide a conduit for the flow of safety information to and from employees and management. By freely communicating our safety concerns, we can all help each other avoid becoming "the other guy."

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.