



# HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

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## PLT Reaches New Record High Temperatures

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

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

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

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

## Credit Union Fights Inflation, Tightens Credit

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

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

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

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

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

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

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

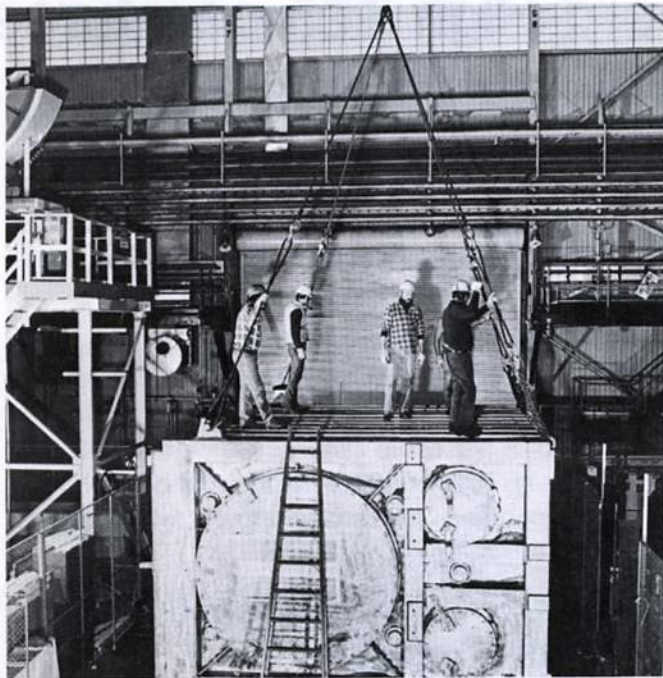
Board President Patricia Skarulis pointed out that no one can borrow money from the credit union until he saves. The credit union is open to employees of Princeton University, the Institute for Advanced Study, the Robert Wood Johnson Foundation, McCarter Theatre, Princeton University Press, Princeton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

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



# TFTR Neutral Beam Assembly Underway at PPL

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



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

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

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

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

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

## Symposium Scheduled

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

## Pedal Power

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

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

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

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

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

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

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