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HOTLINE

The Princeton Plasma Physics Laboratory is a United States Department of Energy Facility

PPPL Prepares for the Year 2000

The problem started in the sixties. Memory for computers was expensive and people saved every bit of it. So when entering a year, folks used the last two digits rather than all four numbers. The year 1968 became simply "68."

Nobody thought about the consequences.

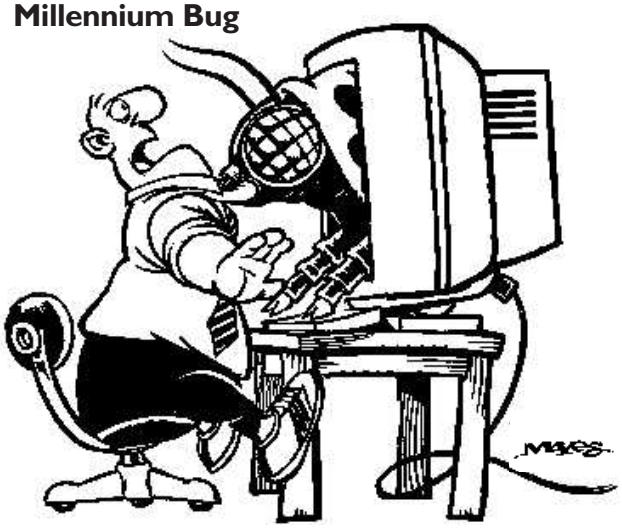
Fast forward to the approaching year 2000. The last two digits could be read as *1900*, not 2000. Imagine the problems.

Computer functions that depend on dates may produce unpredictable results ranging from equipment failures to ambiguous or incorrect data. Internal clocks on hardware may not roll over to the year 2000 and data may not be stored correctly. The use of two digits to represent the year may affect calculations, comparison, and data sorting.

Not to worry.

When 2000 arrives, PPPL will ready. Upon the return of staff after next year's holiday break, employee access cards will continue to lift the entrance gate for admittance, paychecks will be distributed — as usual — at the end of the month, and vendors will receive payment for their bills. Operations are anticipated to continue normally because the Laboratory has been tackling the "Year 2000" problem, commonly referred to as Y2K, for the last few years.

Millennium Bug



Those Affected

PPPL computers affected by Y2K are IBM large mainframe computers, as well as IBM and IBM-clone personal computers built before 1994, said PPPL Computer Head Dori Barnes. Systems and applications most affected at the Laboratory include the financial systems, which include those for accounting, procurement, and budgets, and the programs developed by scientists for specific research. MAC users will **not** be affected by the Y2K problem. "With the exception of the financial systems, we do not have any systems that would cause us to halt operations and productivity. We would just have some annoyances," said Barnes, who is the Lab's Point of Contact for the Department of Energy (DOE) on Y2K.

Preparing the Lab's financial systems computers for the Year 2000 is the largest task. In Fiscal Year 1996, PPPL Information Resource Management (IRM) Head Bob Wilson, along with IRM employees Jim MacTaggart, Rich Iavarone, and Joan Orlopp, began upgrading the financial systems. Once completed, they will have upgraded the IBM mainframe computer hardware, two operating systems on the mainframe, all the system applications, the servers, and department personal computers. So far, everything has been upgraded except one of the mainframe operating systems and about half of the applications on the mainframe.

So how do they test systems?

"First we upgrade the operating system. Next we survey the applications, identifying which will have problems. After fixing these problems, we essentially tell the machine the date is 2000 and see what happens when we run programs," said Wilson.

There are three critical dates to test — January 1, 2000; February 28, 2000 (a leap year); and September 9, 1999. Some companies used the numerals nine, nine, ninety-nine as digits to flag records as invalid. "We have to prove that we don't have any of those in our system," said MacTaggart.

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Y2K

Continued from page 1

The system also must be tested to see if February 29 follows February 28 or if it tells the computer to skip to March 1 as it would for an ordinary year.

"The DOE is essentially requiring us to prove that we can survive those three dates," said Wilson.

The Y2K project for the financial systems is taking several person-years to complete. "The work is time consuming because we have approximately 1 million lines of code in our system and virtually all of it has to be looked at manually. There are utilities that look for systems level problems, but at the applications level most problems need to be found by either surveying the code or testing with a 2000 date," said Wilson. A line of code is a single command within a computer program.

Wilson said a big portion of the accounting, procurement, and budgeting work is now computerized. If the computers did not operate, PPPL would have to employ many more employees to accomplish these tasks, as it did in the past. "We've built systems that reduce manual effort. It is critical that we keep the systems running or we'd have to go back to large staffs," he said.

Another group that must attend to Y2K includes the scientific staff. PPPL scientists are encouraged to look at the codes in their individual applications to see if they will have a problem when the new year begins. "The physicists need to look at the code for their physics applications ahead of time. They are not going to be doing physics calculations that are wrong because of the Y2K problem, but they may have problems. For instance, they could be using wrong calibrations," noted Barnes.

Various other areas at the Laboratory are affected by Y2K, including building systems that have a date function, such as the fire protection and energy management systems. The security and communications systems, as well as programs used by the Health Physics group, are similarly affected by Y2K.

According to Site Protection Head John Bavlish, PPPL's fire protection reporting, security, and communications systems were either installed or have been upgraded to be Y2K compliant. So, too, is the energy management system.

In the Health Physics area, Y2K could have an impact on tritium sample analysis, said Environment, Safety, and Health Head Jerry Levine. When testing liquid or smears that may be contaminated by tritium, Health Physics staff use counters that are dependent on computers to function. These computers are not Y2K compliant. "Most likely, the solution will be to install new equipment," Levine said.

Still others must address database problems brought on by the approaching year. For instance, the toolcrib uses a database to track items and it must be fixed for compliance.

DOE Deadline

March of 1999 is the deadline set by the DOE for the Laboratory to be Y2K compliant. With much effort and over many hours, PPPL is progressing toward that goal. "The DOE wants us to be completely remediated by March of 1999," said Barnes. ●

What Are You Doing About Y2K?

Who Should Worry?

- Scientists who have developed their own programs for specific research tasks.
  You are encouraged to test your applications for Y2K and fix, if necessary.
- Database users who have IBM and IBM-compatible computers.
  Please check databases for compliance. If you need help, please send an e-mail to helpdesk@pppl.gov.
- Anyone who suspects he or she may have programs that are not compliant.
  If you are uncertain, send an e-mail to dbarnes@pppl.gov.

Who Does NOT Need to Worry?

- MAC users.

HOTLINE

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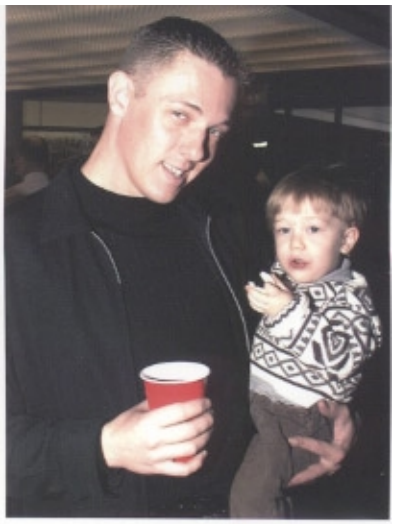
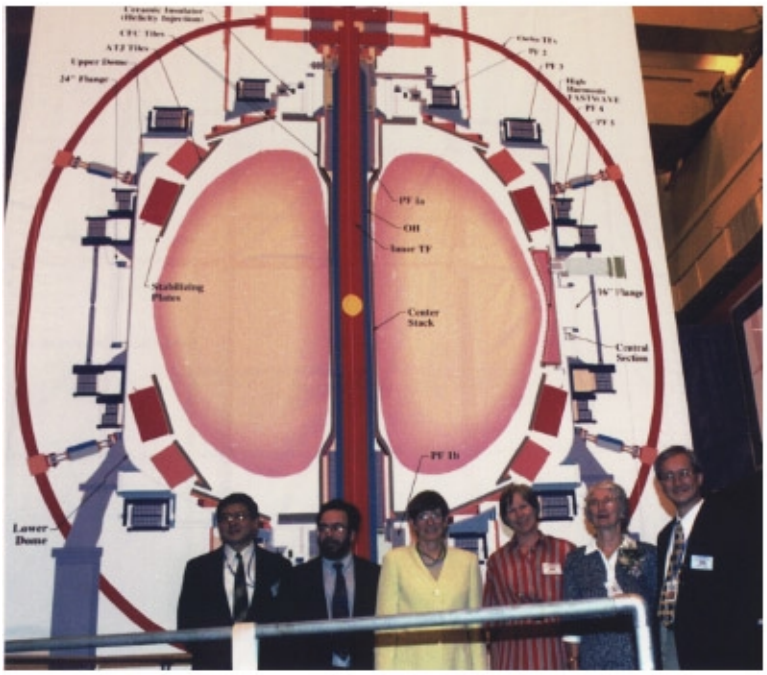
Glad Tidings Abound at PPPL's Holiday Festivities



On December 23, the Laboratory hosted an employee holiday party featuring food, music, and good times. At right, The Rhythm Kings, who include PPPL physicist Ed Synakowski, provides musical entertainment during the bash. At middle right, PPPL Director Rob Goldston addresses staff. Top right, PPPL'er James Morgan and Max Post Zwicker, son of PPPL'er Andrew Post Zwicker, participate in the festivities. Above and at top left, employees enjoy the food and conversation.

The Year in Review



Standing in front of a full-scale drawing of NSTX at the groundbreaking ceremony are (from left) Masa Ono, NSTX Project Director; Rob Goldston, Director of PPPL; Martha Krebs, Director of the U.S. Department of Energy's Office of Science; Anne Davies, Associate Director, U.S. Department of Energy Office of Fusion Energy Sciences; Doreen Spitzer, widow of Lyman Spitzer, Jr.; and Martin Peng, NSTX Program Director.

PPPL celebrated the dedication of the Lyman Spitzer Building and the groundbreaking of the National Spherical Torus Experiment (NSTX) on May 18, 1998. PPPL's Laboratory Office building was renamed in honor of Laboratory founder Lyman Spitzer, Jr., who died in 1997. Mrs. Spitzer (right) and Martha Krebs, Director of the U.S. Department of Energy's Office of Science, view the building plaque after the unveiling.

More than 125 students from area schools participated in hands-on science demonstrations, watched some of their classmates receive awards for pollution prevention posters, and toured the Tokamak Fusion Test Reactor during Pollution Prevention Awareness Day at PPPL in April. The Laboratory hosted the youngsters, as well as about a dozen children of staff who came to PPPL for Take Our Daughters to Work Day. Diane Carroll, Head of PPPL's Science Education Program, demonstrates to students the effects of magnetic fields on plasma in an uncoated fluorescent light bulb.

In April, the Laboratory participated in Communiversity, an annual springtime celebration that joins Princeton University with the community of Princeton. At top, PPPL Associate Director for External Affairs John DeLooper (left) demonstrates turbulence with a flowing bubble apparatus to the sons of Laboratory Deputy Director Richard Hawryluk as Hawryluk (in sunglasses) watches. At left, Information Services Head Anthony DeMeo fields questions about the Lab.

PPPL Nobel Laureate Russell Hulse and Plainsboro Public Library Director Jinny Baeckler spearheaded a project called "Contact Science," which will create, disseminate, and support small-scale traveling science exhibits in public libraries. The prototype exhibit would be located at the Plainsboro, New Jersey library and travel to other libraries from there. Procter & Gamble, Inc. is funding the Phase I scoping and program development studies. The Contact Science team includes, from left, former PPPL'er Dick Rossi, consultant Barbara Graham, Hulse, and Baeckler.

Construction of the National Spherical Torus Experiment (NSTX) progressed rapidly. The 23,000-pound vacuum vessel for NSTX arrived at the Laboratory on August 5, marking a major step in the construction of the new device. Earlier in the summer, the world's tallest ohmic-heating solenoid was delivered to PPPL and lowered over the inner toroidal-field coils of NSTX, which were also major milestones in the assembly of the project.

Ten teachers from across the country participated in "Plasma Camp," an intensive two-week summer program of lectures, lab work, and curriculum design for high school physics teachers. During the camp, officially called the Plasma Science and Fusion Energy Institute, PPPL physicist Andrew Post Zwicker (left) discusses an experiment with high school physics teachers Brian Wargo (middle) and Uma Jayaraman (right). They are using an apparatus at PPPL for studying the conditions under which air can become a plasma.

The Laboratory honored twenty-two inventors for Fiscal Year 1997 during the sixteenth annual Patent Recognition Dinner on June 16 at Princeton University's Prospect House. Those attending the dinner and receiving awards were (from left) Don Weissenburger, Joseph Cecchi, Charles Skinner, Nathaniel Fisch, Robert Woolley, Samuel Cohen, Gennady Shvets, Tobin Munsat, Jan Wioncek, Enoch Durbin, Szymon Suckewer, and Hironori Takahashi.

Happy New Year!

December ...A Month for Giving at PPPL

December marked a month of generosity at the Laboratory. Several drives were underway to provide for those in need. Below is a sampling of PPPL's efforts.

ER/WM Relief Effort for Hurricane Victims

The Laboratory's Environmental Restoration/Waste Management (ER/WM) group headed a drive at PPPL to collect items for Guatemalan and Honduran victims of Hurricane Mitch this fall. Employees contributed food, medical supplies, equipment, and clothing for the relief effort. PPPL's Keith Rule headed the effort to collect and package the items and arranged for their distribution to the nearest relief organization before the holiday break.

DACW Holiday Baskets

The Director's Advisory Committee on Women (DACW) "adopted" two needy families in December through Princeton University's Holiday Basket program. Working with HomeFront, a local agency that provides for the homeless, the DACW provided all the items on wish lists submitted by the families and donated additional items for stocking stuffers. HomeFront staff gave the baskets to the recipient families during a holiday party in their honor.

United Way Drive

PPPL's 1998 United Way Campaign netted $21,221!

Maintenance and Operations Collection

The Maintenance and Operations Division sponsored a Holiday Basket for the Mercer County Head Start Program. At the request of Head Start, 19 hat-and-mitten sets in toddler size were donated by the division to one entire class in the program. The sets were purchased at many different retailers in the vicinity, with a certain number for boys and another quantity for girls. Each set was unique. PPPL's Sara Flohr and Linda Harmon organized the effort.

A special thanks goes to all staff who so generously donated to these and other worthy causes. ●

From left are Steve Elwood, Keith Rule, and Rob Sheneman with the donations for the Honduras and Guatemala relief efforts.

Science Bowl Volunteers Needed

Volunteers for the New Jersey Regional Competition of the National Science Bowl®, which will be held at PPPL on Saturday, February 27, are needed. If you are interested in serving as a judge, timekeeper, moderator, or scorekeeper, or could assist with logistics, please call James Morgan at ext. 2116.

Doreen Spitzer Group Tours NSTX

In December, Doreen Spitzer, widow of Laboratory founder Lyman Spitzer, Jr., brought a group of friends to PPPL to tour the National Spherical Torus Experiment (NSTX). It was Mrs. Spitzer's first visit to the NSTX Test Cell since the groundbreaking ceremony for the project in May. By December, much of the machine had been constructed. At left, NSTX Program Director Martin Peng (pointing) gives an overview of the project, which is scheduled to produce first plasma in February, 1999. At right is Mrs. Spitzer on the tour.

Keeping Fit ... PPPL'ers Hit the Pavement

Four Participate in Area Marathons

During 1998, several runners from the Lab participated in marathons along the East Coast. Steve Jardin ran in the New York Marathon, J.W. Anderson in the Marine Core Marathon in Washington, D.C., and Tony Bleach and Charles Skinner in the Philadelphia Marathon. Tony and J.W. also ran in the Jersey Shore Marathon earlier in the year. Above, the group practice their sport on the grounds at PPPL. From left are Skinner, Bleach, Jardin, and Anderson. At left, from left in running gear are Skinner, Anderson, Bleach, and Jardin.

America Recycles Day at PPPL is a Success

So why recycle and buy products which contain recycled material?

During PPPL's celebration of America Recycles Day this past fall, the Laboratory hosted a morning devoted to answering just those questions. The theme of the day, which included speakers and displays, was, "If you're not buying recycled, you're not really recycling."

"Recycling and buying recycled creates jobs and economic opportunities, creates new markets ... and conserves resources and energy," said guest speaker Aletha Spang during the November 17 event.

Spang, of Recycling Unlimited, recited a list of recycling benefits and displayed examples of recycled materials and products manufactured with recycled materials during her talk, "The Importance of Recycling and Buying Recycling Content Products." Such products include "plastic lumber," which is used for picnic tables and boardwalk, and pencils made from recycled blue jeans, as well as carpet made from recycled material. The picnic tables in PPPL's courtyard are an example of plastic lumber. They are manufactured with 100 percent recycled plastic.

Lab employees stop by the U.S. Postal Service recycling display in the Lobby on America Recycles Day. From left are U.S. Postal worker Carol Willis and PPPL staff members John Bennevich, Keith Rule, and Steve Elwood.

Recycling Performance and Goals

In addition to Spang, PPPL's Thomas J. McGeachen and Margaret King discussed the Lab's recycling performance and goals, and J.W. Anderson recognized members of the Laboratory staff for their support of PPPL's recycling effort. During Fiscal Year 1997, PPPL recycled 145,505 pounds of paper and 23,752 pounds of aluminum, plastic, and glass bottles and cans. During Fiscal Year 1998, PPPL's purchases of federally designated products manufactured with recycled materials was 54 percent, up significantly from the previous year's 6 percent. The process of buying products manufactured with recycled materials content is called "Affirmative Procurement" or "Buying Recycled" and includes the purchase of items such as copier paper, printer paper, and remanufactured toner cartridges.

During America Recycles Day, local exhibitors provided displays of their recycled-content products in the Lyman Spitzer Building Lobby and fielded questions from staff. Exhibitors were from the U.S. Postal Service, Staples, PPPL, the Environmental Protection Agency, the Steel Recycling Institute, and Home Depot.

The events were open to all PPPL employees and the public. The Lab's Environmental Restoration/Waste Management and Maintenance and Operations groups organized the day.

"A strong recycling effort and procurement of recycled-content products at the Laboratory is important. Not only is the recycling and the use of recycled-content products consistent with the goals of fusion, but it is a requirement of our client," said PPPL Director Rob Goldston. ●

As part of America Recycles Day, a national contest to win "The American Green Dream House," a three-bedroom home built primarily with recycled-content materials, was held. One of the entry boxes was in the Lyman Spitzer Building Lobby. The winner was chosen on December 15 from a random drawing of entries submitted by 2.1 million individuals who voluntarily pledged to recycle and buy recycled products. Rhode Island resident Lori McKee won the contest. For more information about the contest and the winner, check out the website at http://www.americarecyclesday.org .