

FermineWS

FERMI NATIONAL ACCELERATOR LABORATORY

Laboratory sets luminosity and Pbar stacking records



Reviewing data which shows the September record-breaking accelerator luminosity are control room operators (sitting l to r) Jim Morgan and John Reyna (standing l to r) Dale Keehan, Kevin Bliss and Keith Engell.

The month of September was a record-breaking month for the Laboratory as both the accelerator-luminosity and the Pbar-stacking-rate records were broken.

On Monday, September 14, the accelerator luminosity reached 3.19×10^{30} , surpassing the previous luminosity record of 2.07×10^{30} . On Thursday, September 24, the Pbar stacking-rate reached a continuous stacking rate of 2.47×10^{10} averaged over a one hour period. This beat the previous stacking-rate record of 2.35×10^{10} .

Bob Mau, Accelerator Operations head, said these new records mean the accelerator is doing well and expects these records to start falling fairly quickly as the accelerator nears its goal of 5×10^{30} and the stacking rate approaches its 2.5×10^{10} goal.

"This is exciting for us," Bob said. "We are doing much better than the last collider run." The new records are due to the hard work of many different employees at the Laboratory, Bob added. "The Pbar staff contributed a great deal and there were many people who individually contributed a lot of work. This was a joint effort among many people."



Operating the accelerator controls when the Pbar-stacking record was broken are (sitting l to r) Kevin Bliss and Dale Keehan (standing l to r) Robin Spayde, Keith Engell, John Reyna and Crew Chief Bill Pellico.

These new records also have proved to be quite good for both the CDF and DØ experiments.

"This has been great for the experiment," said **John Butler**, DØ experimenter. "We've been waiting to get to the full luminosity. This type of performance from the accelerator will help us in the search for the top quark." John said the accelerator has been running near 1×10^{30} , about 20 percent of the luminosity goal. To have the luminosity reach over 3×10^{30} has proved to be very exciting, he added.

Jim Hylen of CDF said he was very happy to see the record broken. "It is really great to see data start to roll in," he said. "It is a challenge to keep the detector running efficiently at such a high luminosity, but we hope to meet that challenge."

According to **Elvin Harms**, AD/Operations Specialist, the luminosity of the accelerator is a measure of how many particles are colliding in the accelerator. It is a measure of the quality of collisions and an indication of how well the accelerator is working. The stacking rate is a measure of how many antiprotons are being collected every hour.

inside

Science Education
Center Dedicated
page 2

Lab Honors
Innovators
page 3

Announcements
& Events
page 4

October: Energy
Awareness Month
page 6

Quality Corner
page 7

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Education Center formally opens doors



Robert Wilson, Stanka Jovanovic, John Peoples, Leon Lederman, Admiral Watkins and Marjorie Bardeen stand outside of the newly opened Leon M. Lederman Science Education Center. In his welcoming speech, John highlighted the events leading up to the completion of the center and cited the commitment of Fermilab and DOE to the realization of this goal.

Thousands of kids will come through this center. But what I'm interested in as much, is the one kid out of a thousand who will see one of these demonstrations, something will change in him and he'll go on to do something which changes the way human beings live on this planet.— Leon Lederman

A dedication ceremony held September 25 formally opened the doors of the Fermilab Science Education Center to the public. Named in honor of Fermilab's second director, Leon M. Lederman, the 8,200 square foot building houses the staff and facilities for Fermilab's education programs which yearly attract thousands of teachers and students from around the country.

Secretary of Energy James D. Watkins and his wife traveled to the Laboratory to take part in the opening ceremony along with Director John Peoples, Leon Lederman and Marjorie Bardeen, program manager of the Fermilab Education Office. Admiral Watkins noted that the Leon M. Lederman Science Education Center exemplifies the department's commitment to utilizing vast scientific resources to improve math and science education in the nation.

Important elements of the new center are a science laboratory which accommodates 60 students and a computer and technology classroom for 24 students. In addition, an array of interactive teaching stations, environmental field stations and audio-visual materials invite exploration and experimentation. The interactive displays focus on

four areas particularly appropriate to the research conducted at Fermilab: accelerators, detectors, scattering experiments and the powers of ten, which presents the very large and the very small in nature.

The Fermilab Education Office currently offers a variety of institutes and workshops for teachers and research appointments for students and teachers from all over the United States. Local teachers bring their students to the Center for a variety of stimulating and innovative classes, for field experiences in the reconstructed prairie and for creative investigations in physics. The Teacher Resource Center, a clearing-house for ideas, material and resources, provides an educational hub that enriches the teaching of mathematics and science in the surrounding community.

The Lederman Science Center is open to the public Monday through Friday between 8:30 a.m. and 5 p.m. Groups of more than five should call first for an appointment.

Fermilab's education initiatives are one element of DOE's nationwide strategy for improving mathematics and science education in America. In May 1990, Admiral Watkins issued a Secretarial Notice that vastly expanded the department's education mission. In 1991, more than one million students, teachers and parents participated in more than 800 DOE-funded education programs.

Education Center named for Leon

The Fermilab Science Education Center was officially christened on September 25 the Leon M. Lederman Science Education Center in honor of his contributions to precollege science education.

Leon has long recognized the importance of science education to the intellectual and economic health of society. In 1979, as director of Fermilab, Leon started *Saturday Morning Physics* for high school students, a program that continues to graduate 300 students annually. At the time, Fermilab funds could not be spent on precollege education programs, so Leon encouraged the establishment of Friends of Fermilab, a not-for-profit corporation dedicated to supporting Fermilab precollege programs. Since its incorporation in 1983, Friends of Fermilab has raised over \$2,600,000 from public and private sources including DOE, NSF, the state of Illinois and various private foundations. Today, Friends of Fermilab and Fermilab offer over 50 precollege programs that served 32,000 students and 11,000 teachers in FY92.

Another initiative that profited from Leon's involvement is the Teachers Academy for Mathematics and Science designed to support Chicago public school reform by enhancing teachers' abilities to teach mathematics and science. Leon led the drive to persuade several organizations to sponsor this ambitious effort.

As the Governor's Science Advisor, Leon helped shape the Science Literacy Grant Program of the Illinois State Board of Education. Ten million dollars is available annually for projects to enhance the teaching and learning of science and mathematics.

In addition to supporting these specific initiatives for precollege education, Leon has served as the president of the American Association for the Advancement of Science.

Continuing his work as a champion for enhanced science and math education, Leon recently joined the staff of the Illinois Institute of Technology where he will teach physics this fall. According to

Continued on page 7

Fermilab honors inventors

The Laboratory honored the achievements of 23 Fermilab inventors who received patent, copyright or license agreements in 1991 at a reception held September 3 in Wilson Hall.

During the ceremony, each innovator received a framed certificate in recognition of his valuable technology contribution at Fermilab. Honored at the reception were:

Venkata Areti, Robert Atac, Joe Biel, Mark Fischler, Irwin Gaines, Robert Hance, Don Husby and Tom Nash for their work on Interprocessor Bus Switching System for Simultaneous Communication in Plural Bus Parallel Processing that resulted in the issuance of a patent. This system facilitates high-speed parallel processing in several configurations and allows calculations much faster, more conveniently and much less expensively than previously possible.

David Anderson was honored for his patent on Divalent Fluoride Doped Cerium Fluoride Scintillator. According to Dave, the use of cerium fluoride shows considerable promise for improvements in medical imaging devices. Its use as the scintillator in a positron emission tomography camera will greatly enhance the ability to image the living heart and thus better predict and prevent heart disease. Its principal application will be for medical imaging and the study of metabolic processes.

Honored for his invention of the Planar Slot Coupled Microwave Hybrid was **Jeff Petter**. He received a patent in December 1991. This invention can be used to design a whole new class of higher-performance broadband microwave hybrids, such as Magic Tees, 180 Hybrids and Wilkinson-type power splitters.

Ralph Niemann, John Gonczy, Tom Nicol, Finley Markley, and Bill McCaw were honored for the patent they received for their invention, Cryogenic Support Member, and for their patent application for Apparatus for Measuring Tensile and Compressive Properties of Solid Materials at Cryogenic Temperatures. The Cryogenic Support Member is a joint that serves in cryogenic load-bearing applications, and is good in tension, compression, flexure and torsion. The technique can be applied to a wide range of tube diameters and across a broad range of service temperatures. Such a support system could be used for low-heat leak cryostats for over-the-road transports, MRI cryostats, medical accelerators that utilize superconducting magnets and similar applications.

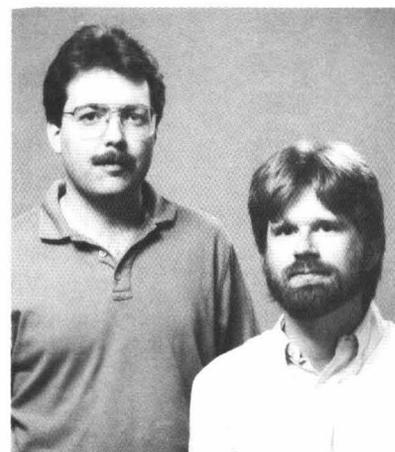
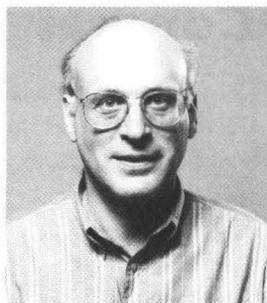
The Apparatus for Measuring Tensile and Compressive Properties of Solid Materials at Cryogenic

Temperatures is a system for the study of material properties at cryogenic temperatures. Its features include: material samples in operating (cryogenic) environment, controlled application of compressive and/or tensile loads, measurement of forces and displacements and low-heat input to cryogenic environment.

George Hockney, Paul Mackenzie and Mark Fischler were recognized for their receipt of a copyright for the creation of CANOPY software. This software is written for the ACPMAPS multi-array processor and is highly portable and available to run on Ultrix vaxes, Sun workstations, IBM PCs, and ACP farms of AT&T 32100 nodes. CANOPY is a framework which facilitates the development and coding of a certain set of algorithms. The types of problems helped by CANOPY are those which can be thought of as existing on a collection of "sites" on a grid. For these problems, the software framework provides an easy-to-use and hardware-independent way of eliminating the complexities of paralleling tasks and communicating between sites.

Also honored at the ceremony were **Charles Briegeland and Kevin Cahill**. They were recognized for the copyright they received on FIRUS-88 software. This software is a new embodiment of FIRUS, Fermilab's fire, utility, security and power-consumption monitoring system. FIRUS-88 runs from an IBM-AT console and uses a commercial database to provide an intuitive windowing user interface that enables simultaneous alarm reporting, device monitoring, plotting, parameter pages and data logging via a variety of displays.

Mark Fischler was also honored for his copyright on the Second Generation ACP MIPS Multi-processor User's Manual and **Joe Biel, Mark Edel,**
Continued on page 6



Among those innovators honored at the September 3 reception were: 1 to r Tom Nash, Joe Biel, Irwin Gaines, Mark Fischler, David Anderson, Finley Markley and Mark Edel and Mike Isely.

Congratulations to

Deborah and **Richard Glosson** (TS/Mag. Dev. & Test) on the birth of their son, Blake William Glosson. Blake was born on September 2, 1992 at 10:53 p.m. at Delnor Hospital in Geneva. He was seven pounds seven ounces and was 19 1/2 inches long. Blake has an older brother Anthony, age two.



Prairie Committee seeks volunteers

The Fermilab Prairie Committee will hold seed harvest in October at the Laboratory and at Markham, Illinois. Volunteers are needed to hand gather seeds that will be used to maintain the diversity of plant life in the nearly 800 acres of reconstructed prairie on site. All interested persons are welcome to participate.

Harvesting will take place at the unprotected prairies in the Markham, Illinois area on Saturday, October 31. A van will leave Wilson Hall at 9 a.m. sharp for those seeking transportation. Harvesters will meet at the McDonald's restaurant on 159th Street, two blocks east of Kedzie Avenue at 10 a.m. From there, the groups will go to the prairies. Lunch may be purchased at McDonald's. Harvesting will continue until 3 p.m.

On Sunday, November 1 harvesting will take place at Fermilab from 9 a.m. until 3 p.m. Follow the signs starting from the intersection of Eola and Batavia Roads. Lunch may be purchased at the Fermilab cafeteria or volunteers may bring their own food. Groups are welcome, but advance notice would be appreciated.

Volunteers are welcome to spend as little or as much time as they wish on the appointed days. No experience is necessary. All harvesters should wear field clothing and gloves and bring pruning shears and paper grocery bags if possible. Coffee and donuts will be provided. For more information, call the Fermilab Public Information Office at x3351. In case of bad weather on the scheduled harvest dates, call x3000 to verify harvest plans.

Harper's index

Chances that an American under the age of 19 participated in a political demonstration last year: 2 in 5.

Chances that an American under the age of 19 in 1968 participated in a political demonstration that year: 1 in 6.

URA adopts new conflict of interest statement

A few months ago, Universities Research Association adopted a new statement with regard to Conflict of Interest.

The Board of Overseers for Fermilab has asked that this corporate policy be implemented.

The new conflict of interest statement has been published in the Fermilab Personnel Policy Guide as Article 23. Anyone desiring information regarding the statement should refer to the policy guide.

NALWO slates events

All women associated with Fermilab are invited to attend the NALWO Fall Luncheon to be held today, October 2 from 11:30 a.m. until 1:30 p.m. It will be held in Chez Leon. Please bring a dish to share. Babysitting is available by reservation.

The NALWO potluck dinner will be held at Kuhn Barn on October 9 beginning at 5:30. Everyone is welcome. Bring a dish for 12 to share.

The Folk Dances are being held in Kuhn Barn every Thursday evening from 7:30 to 10 p.m.

Angela Jostlein is teaching beginning German every Tuesday from 4:15-5:30 p.m. in the conference room at 20 Neuqua.

For additional information regarding NALWO sponsored activities, contact Brenda Kirk at x3440.

Nalrec news

The September Social Hour was a great deal of fun with lots of funky dancing and a very likable DJ spinning the tunes. The winners of the Rose Records certificates were: **Marjorie Garner** for the 50s and 60s (smart woman), yours truly for the 70s, **Sherry Hickey** for the 80s and **Harold Hoffman** for the 90s. A big thanks to **George Davidson** and **Mike Frett** for the success of this party.

October 16 will be our Octoberfest. Music will be provided by the Conrad Frelly Trio. The trio plays six instruments—not at the same time—including the drums, sax, clarinet, keyboard and accordion. **John Satti** will cook up brats, German potato salad (is there another kind) and sauerkraut. There will be other surprises that he has yet to reveal.

The Christmas Dinner Dance is December 18 at the Wilton Manor in Wheaton. It looks to be a great time. One you won't want to miss.—*Charlotte Smith*

FERMILAB ARTS SERIES PRESENTS

Marcus Roberts and Ellis Marsalis

An evening of jazz piano improvisation with jazz masters Marcus Roberts and Ellis Marsalis

Together, facing one another at their respective Steinways, Marcus Roberts and Ellis Marsalis perform a program of solo and duo piano improvisation with repertoire touching upon numerous stages of jazz piano history. The interaction between the two players—separated in age by more than thirty years—is one of respect and slight competitive interplay. Each musical composition in their set sparkles with inspiration. For every intricate rhapsodic solo and subtle chording one player exudes, the other has a comeback just as creative and exemplary. Join Marcus Roberts and Ellis Marsalis as they perform in Fermilab's Ramsey Auditorium on Saturday, October 24 at 8:00 p.m.

Pianist extraordinaire Marcus Roberts was cited in the feature story of *TIME* magazine as one of the major players of "the new age of jazz"—the youthful, tradition-heavy renaissance. All three of his BMG releases have reached #1 on *Billboard's* Jazz Chart. He is gifted with the uncanny ability to add new, contemporary soul to the classic, traditional jazz repertoire. He first earned the attention of the jazz world when he joined forces with trumpeter Wynton Marsalis, but now Marcus has emerged as the premier solo pianist—being labeled as the only living jazz pianist capable of captivating and holding an audience attentive during a full 90 minute recital.

If one man could be given credit for literally saving jazz music from near-extinction in the 80s, that man would be Ellis Marsalis,

New Orleans' patriarch of jazz and highly-credited music educator. Though he is perhaps best known as the father of jazz greats Wynton, Branford and Delfeayo Marsalis, Ellis' contributions to the history of jazz reach far beyond this scope. He's responsible for nurturing and influencing an entire generation of brilliant jazz players through his groundbreaking educational techniques. Ellis' style, with the deft touch and sure dynamics of a true virtuoso, is steadfast in traditional jazz. Drawing from the great jazz legends of his time—from stride to be-bop—he is an improvisational genius.

Don't miss these two jazz greats when they perform at Fermilab on Saturday, October 24 at 8:00 p.m. Tickets are \$13. For further information or telephone reservations, call 708-840-ARTS weekdays from 9 a.m. to 4 p.m. At other times, an answering machine will give you information.



Don't miss these two jazz greats when they perform at Fermilab on Saturday, October 24 at 8:00 p.m.

Movie schedule announced

The Fermilab International Film Society presents movies from all over the world. Movies are shown at 8 p.m. Fridays in Ramsey Auditorium. The October movie schedule is as follows:

October 9: *Ju Dou*

A tale of lust, murder and revenge set at a dye works in the 1920s rural China. Frenzied emotions are expressed with bold use of color. Zhang Yimou, dir. China-Japan 1990, 93 minutes.

October 23: *Jacob's Ladder*

Screenplay by the author of *Ghost*, this is a creepy, nerve-jangling experience. Life of Vietnam vet merges with recurring dreams of death and entrapment. Adrian Lyne, dir. U.S. 1990, 113 minutes.

Credit Union seeks directors

The Argonne Credit Union is seeking directors for the 1993 Board positions. No experience is necessary—just a sincere desire to become involved. This is a great opportunity to help the entire membership of your credit union. All ACU members in good standing are eligible. To be considered as a candidate, just stop by the credit union office located in Wilson Hall 1 West and request an application packet.

The deadline for application returns is Monday, November 30, 1992.

For further information contact Joan Harris, Business Development and sales Manager at 708-252-5800.

Gym memberships now on sale

Recreation Facility 1993 Gym Memberships are now on sale in the Activities Office, WH15W. Regular membership is \$40. Student membership is \$20. For more information contact Jean Guyer, Activities Office, x4544.

Remember: Your 1992 gym membership expired October 1.

Energy Awareness Month

October: Energy Awareness Month

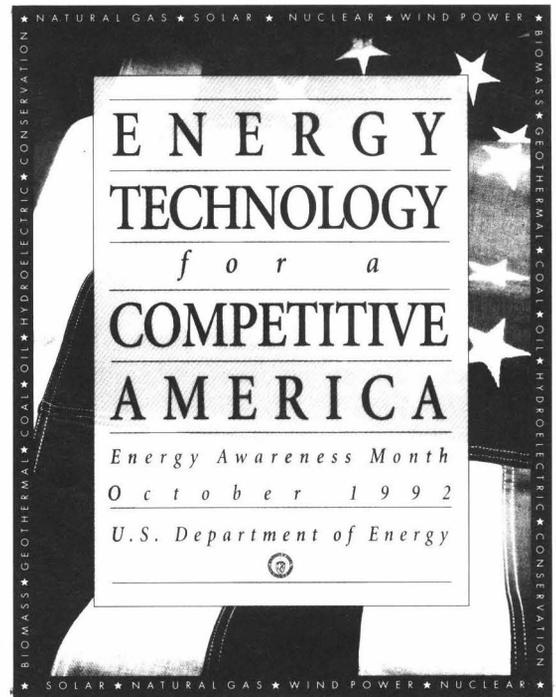
We start the advent of another fiscal year with the annual observance of the Energy Awareness Month. It is the time to reiterate our individual commitment towards efficient energy use and conservation and towards increasing our understanding and awareness of our limited energy resources. This years theme:

Energy Technology for a Competitive America

Over the years, we have come together, on an individual level and on a national level, to raise our level of consciousness regarding the importance of energy conservation. With the economy tending to be more global than in the years past, the need to excel in and further improve our energy technologies is even more urgent.

In a move to set ambitious and definitive goals, President Bush signed an Executive Order, in April 1991, addressing Federal Energy Management, directing all Federal agencies to improve the energy efficiency of their buildings and facilities by twenty percent from 1985 to the year 2000. While the U.S. Department of Energy provides both programmatic and financial assistance to achieve these goals, the responsibility of translating these goals to successful implementation rests on Fermilab. The Fermilab In-House Energy Management Plan FY 1985-FY 2000 addresses various ways to fulfill this responsibility. One of the elements of the IHEM Plan is the conduct of awareness and incentive programs.

As of September 1992, the Energy Conservation Suggestion Awards program was reactivated, after a transitional period, with the express intent of giving Fermilab employees the opportunity (once again) to make suggestions towards energy conservation and be recognized for their ideas as has been done so well in the past. A committee of suggestion evaluators comprising individuals from all divisions and sections has been formed and will be meeting in the immediate future. In the next issue of *Ferminews*, details of the program pertaining to revised program guidelines, committee members, etc. will be made available.—Venkat Kumar



Inventors honored continued

Mike Isley and **Mariano Miranda** were honored for the copyright for the Second Generation ACP MIPS Multiprocessor Software. This software was developed to support Second Generation ACP MIPS systems hardware and is based on the MIPS very high-speed board-oriented micro processor. The software complements the improved performance and flexibility of the hardware while reducing programming complexity for the user.

Honored for his copyright on IBM 3812 Printer Utility Software was **Mike Lazarski**. This software is a set of programs which provides an on-line, menu-driven facility to print line-printer type documents on the IBM 3812-series laser printers and is a culmination of an effort to simplify the usage of these printers. It is designed to allow non-technical end users a simple method of producing high-quality output using these advanced function printers. In addition, it has been written to allow its inclusion into existing systems by a site's programming staff to provide a standard method of access to these printers.

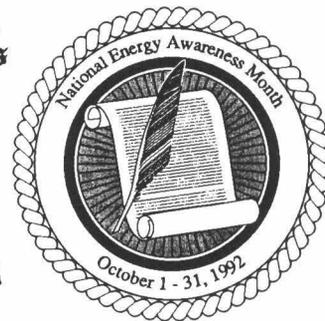
A Proclamation

"Energy Technology for a Competitive America"

- Whereas,** Fermilab has been a leader in the development of innovative methods of energy conservation, particularly in the use of superconductivity to reduce the use of electrical energy; and
- Whereas,** the wise use of energy and energy-producing resources are the foundations of future economic prosperity for our society and because of recently enhanced concerns about the global impact of energy and waste; and
- Whereas,** the proper use of coal, water, natural gas, petroleum products, and alternative energy sources comprises a highly complex set of issues that are of paramount importance to every citizen; and
- Whereas,** consensus regarding proper use is not easily reached; however all involved agree that using less energy, or practicing energy conservation, is most desirable and beneficial; and
- Whereas,** institutions, government, business, and private citizens alike must cooperate to achieve meaningful savings in both energy use and dollars to ameliorate the burden of rising costs of energy; and
- Whereas,** such cooperative efforts are beginning to have an impact on our energy-use habits and to demonstrate reduced energy consumption;
- Therefore,** I, John Peoples Jr., Director of Fermi National Accelerator Laboratory, proclaim **October 1992** as **Energy Awareness Month** at Fermilab, in conjunction with the national observance, because it is important for all citizens to be aware of the necessity of conserving energy for our mutual benefit.

In Witness Whereof, I have hereunto set my hand.
Done at Fermi National Accelerator Laboratory this
25th day of September in the Year of Our Lord
one thousand nine hundred and ninety two.

Director



Quality corner

Two employee suggestions regarding sick leave usage were submitted to the Office of Quality Assurance and Conduct of Operations. Chuck Marofske, head of Laboratory Services Section has addressed these suggestions.

Suggestion:

Every employee is given a certain number of annual paid sick days. Some employees do not take any sick leave and even in the case of illness, prefer to use their vacation days. On the other hand, there are some employees who abuse the sick leave benefit, using the privilege for additional vacation time.

I suggest that the Lab calculate the average number of sick days used per employee. Say the average number for 1991 is 10. Any employee using only $n < 10$ sick days will be rewarded by receiving $(10 - n)$ days of pay.

If the Lab can adopt this policy, employees will be motivated to reduce the use of sick leave. As a result, Lab-wide sick leave usage should drop. It is not impossible under this system to drop the Lab average from 10 days to five days in just a few years.

Initially, the Lab may pay 5 days worth of pay to employees who use only 5 days of sick leave, but later when the Lab average drops the employees using five days would be paid nothing additional and the Lab would get one full week's worth of work per employee without paying anything.

Response:

Accepting this premise assumes people will come to work sick, that people take sick days which are unnecessary and that we can manage an increase in overall costs of paid leave time since minimum payout will be at our current average.

The averaging down concept would require a contract modification. The Laboratory would have difficulty with the position that the current use of sick leave is inappropriate or that management wishes to adopt a program that would increase the cost initially. Once you set a minimum pattern, it is difficult to back off. The cost will come either in time off or buy backs. A basic sick pay concept is to avoid having persons report to work unhealthy. Accident rates increase, quality is more difficult to maintain and the opportunity exists to spread illness to other

workers, thereby further reducing our effective workforce.

Another aspect of the Laboratory sick pay provision is that the program provides a form of income insurance which can extend for as long as six months. Consequently, average use results from a mix of long-term absences combined with a larger number of short-term illnesses. The long-term absences will not decrease with an incentive geared to short absences. Consequently, the cash plan might not have a significant impact on our overall average use.

Suggestion:

There are employees who leave the Lab with a considerable amount of sick leave unused. It would be a nice gesture if the remaining sick leave could be deposited in an emergency account. Employees with long-term or terminal illnesses, who have used all of their sick leave, could then use the emergency account. The account could also be available to employees with sick children requiring extensive hospital stays. Of course, all employees who needed to take advantage of the emergency account would have to provide statements from doctors and hospitals and use would not be granted for short-term illnesses. The account would not be widely broadcast, but if an employee were truly in need, a gift from fellow employees would help a lot.

Response:

The Laboratory already has a provision, which is exercised but on an infrequent basis, which allows persons to receive additional sick leave at one half pay for as long as they had sick leave available at the beginning of the disability period. This safety valve has been effective in cases where there have been repeated traumas experienced by individuals.

The sick leave plan is designed to provide income protection for the individual who is ill and unable to come to work. It does not encompass benefits for workers who stay home from work for family reasons. The Laboratory has a rather progressive annual leave plan which allows individuals to use increments of time to cover such family need absences.

We enjoy a very liberal total sick leave plan in comparison to many organizations. The record of our work force over the years with regard to use is outstanding. Our average lost time overall reflects a conscientious response from workers to be available for assignments. In recent years, there have been tremendous pressures on group medical insurance costs due to technological advances and inflation in the medical industry. These dramatic cost escalations

have impacted on the Laboratory's expense to maintain quality medical insurance. Considering a broad perspective of the total cost of insuring illness, you must include sick leave along with medical costs as a part of the package providing peace of mind and protection to Laboratory workers. Our excellent record with regard to sick leave has been a factor in limiting the cost-sharing impact on employees when accounting for the increased outlay for medical benefits.

If you have a suggestion on how to improve the quality, efficiency, reliability or effectiveness of a Laboratory service or operation, please send it to the Office of Quality Assurance and Conduct of Operations, MS 200.

Leon cont.

Lewis Collens, IIT president, Leon will work closely with IIT staff and board to "craft a new vision for urban science and technology education."

At the dedication ceremony, Leon spoke with characteristic humor. "I am awed by this honor, but I'm also frightened and nervous because I notice that those letters on that plaque are easily removable. Therefore, I am afraid I have to keep running and try to do whatever I can to help make this center something unique and special."—*Marjorie Bardeen*

Protecting the environment

As residents of this planet, we are all interested in enhancing or at least maintaining our quality of life. One way we can accomplish this is by protecting the environment. When working at Fermilab we can share in this effort by preventing pollution and minimizing waste. The U.S. Environmental Protection Agency defines a hierarchy of action for protecting our environment which includes pollution prevention, recycling, treatment and release in that order. Let's explore these options.

Prevent pollution

First, we can prevent pollution by ordering only what we need, using up what we order, using safe handling procedures and substituting non-hazardous for hazardous chemicals. For example, Freon 113 (TF) is a chlorofluorocarbon (CFC) which is used at Fermilab to clean metal parts and circuit boards. It is also suspected of being an atmospheric ozone depleting chemical. The hole in the atmosphere over the North Pole is believed to be caused by CFCs such as Freon 11, 22 and 113. The ozone layer filters out some ultraviolet rays which can cause skin cancer. We can help protect the ozone layer by eliminating the use of CFCs, substituting non-hazardous chemicals such as Microclean and water.

Recycle materials

Our next alternative in environmental protection is recycling waste products. Recycling extends the time it takes to fill our landfills. Most of us are familiar with recycling when we separate our trash into compatible reusable units. Presently Fermilab recycles paper. Waste aluminum cans and scrap metal will be picked up for recycling by calling Business Services at x3585. The Waste Minimization Subcommittee (WMS) is looking into recycling other articles such as glass, plastic and tin cans. Other areas to be investigated are recycling the ethylene glycol used to protect cooling lines from freezing, and engine oil and pump oil.

Treat waste

The last way to eliminate hazardous waste is to treat it so that it is no longer hazardous. Fermilab does this at the Central Utility Building using sodium hydroxide to precipitate radio nuclides and hazardous metals. The supernatant liquid is then neutralized with hydrochloric acid to produce water and common table salt. Wastes are also treated off site by incineration and other chemical or biological processes.

Releasing the hazardous chemical to the air, land or water is not an acceptable solution. Land filling of hazardous chemicals is just a little bit more acceptable because the chemical may eventually be released.

I hope this article will inspire you to look for ways to prevent pollution and minimize waste in your area. We need your help to make Fermilab an even more responsible neighbor and resident. Individually, we can make a big difference. Please, take the time to think about your day-to-day operations and see what you, with the help of the ES&H Section, can do to: prevent pollution; recycle; and treat, then release.

If you have any questions or suggestions, please address them to the WMS at MS119 or E-Mail: CURTF.—*Kenneth Isakson*, ES&H Section

Classified ads

Miscellaneous

Software and Printer: AutoCAD Release 10 and Pagemaker software and JDL engineering printer/plotter. Will print in 16 different colors and output "A" to "C" size drawings. Supports HPGL language. For further information contact Rick at x3782.

Four tires, Goodyear Polysteel P225/70R15. Raised white letters. Half of tread left. \$50 for the set or \$30 per pair. Call Marc at x4189.

Funboat! 1987 Bayliner, 22 foot bowrider, 230 horsepower, tandem trailer and covers included. Superb condition, \$12,000. Call Elissa at x3304 or 708-851-8842.

Nintendo Entertainment System with two control pads, seven games and Game Genie, \$165. Call Frank at x2140.

Two all season tires, 215-65R-15. Less than 10k miles, \$50. Call Jack Smith at x3011 or page 306.

DP ULTRAGYMPAC, flat bench press, lat pull down, cable curls, incline bench press, leg curl, bicep curl, leg extension, much more. Up to 198 lbs. resistance, \$99 obo. Call Matt at 708-208-1751.

Real estate

House for sale: custom built, two story, stone and vinyl home with plaster walls located at 25010 Pauline Drive, Plainfield. Lot size approx. 1/2 acre, three bedrooms, two baths, family room with gas fireplace, kitchen has custom cabinets, Jenn Air self-cleaning oven and convertible stove top with grill, rotisserie, etc., 2 1/2 car garage. All appliances stay. Asking \$172,000. Call Jack Rossetto at x4191.

Vehicles

1982 Cadillac Sedan DeVille, navy blue, 4 door, good condition. \$2,000 obo. Evening hours call 708-513-5102.

1983 Mazda 626 Coup, auto, A/C, 89k miles, AM/FM cassette, \$1650 obo. Call ZHU at x8339 days, x4856 evenings, or FNAL::ZHUYS.

1983 Nissan Stanza, auto, A/C, 78k miles, tilt, 5 door HB, AM/FM cassette. Good body, cruise, \$1350 obo. Contact FNAL::LIJIA or call x8339/8599 days, or 708-406-1865 evening.

1989 Pontiac Bonneville, power steering and brakes, A/C, front wheel drive, AM/FM stereo cassette, power door locks and windows, cruise control, tilt steering wheel, aluminum wheels, gray, 30K miles, \$8,000 or make offer. Call Chuck at x2271, pager 536-8410 or 708-879-0394 evenings.