

Fermi News

Fermi National Accelerator Laboratory

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Number 20

Deconstructing the Main Ring, Magnet by Magnet

by Sharon Butler, Office of Public Affairs

The running joke among the technicians working in the Main Ring tunnel is: "Beam by Monday, right?" Right. It's a phrase that has roused many from a good night's sleep over the last 25 years, when one of the balky dipoles failed, requiring replacement.

But not anymore.

Beam was shut off on September 15, and now, down in the location designated FZero, pipes, wires and cables dangle like amputated limbs in the space where 12-ton magnets and radiofrequency cavities once stood.

Greg "Red Dog" Lawrence, who supervises the mechanical support crews dismantling the accelerator, begged to be allowed to cut out the first magnet. "I took this great big blade thing with a hammer," he said, "and chopped right through the bellows."

With that first magnet free, the dismemberment of the Main Ring began. In 1972 the most powerful accelerator of its time, the Main Ring is now yielding to the Main Injector and another generation of particle physics.

To save money, many of the Main Ring's conventional, copper-coiled magnets will be ripped out, reworked and recycled into the new accelerator. This refurbishment will cost about \$3,000 per magnet, well below the pricetag of a new magnet: \$30,000 for a quadrupole, \$80,000 for a dipole.

One-sixth of the ring, the area designated the F sector, however, will remain almost exactly as it is, soon to begin delivering

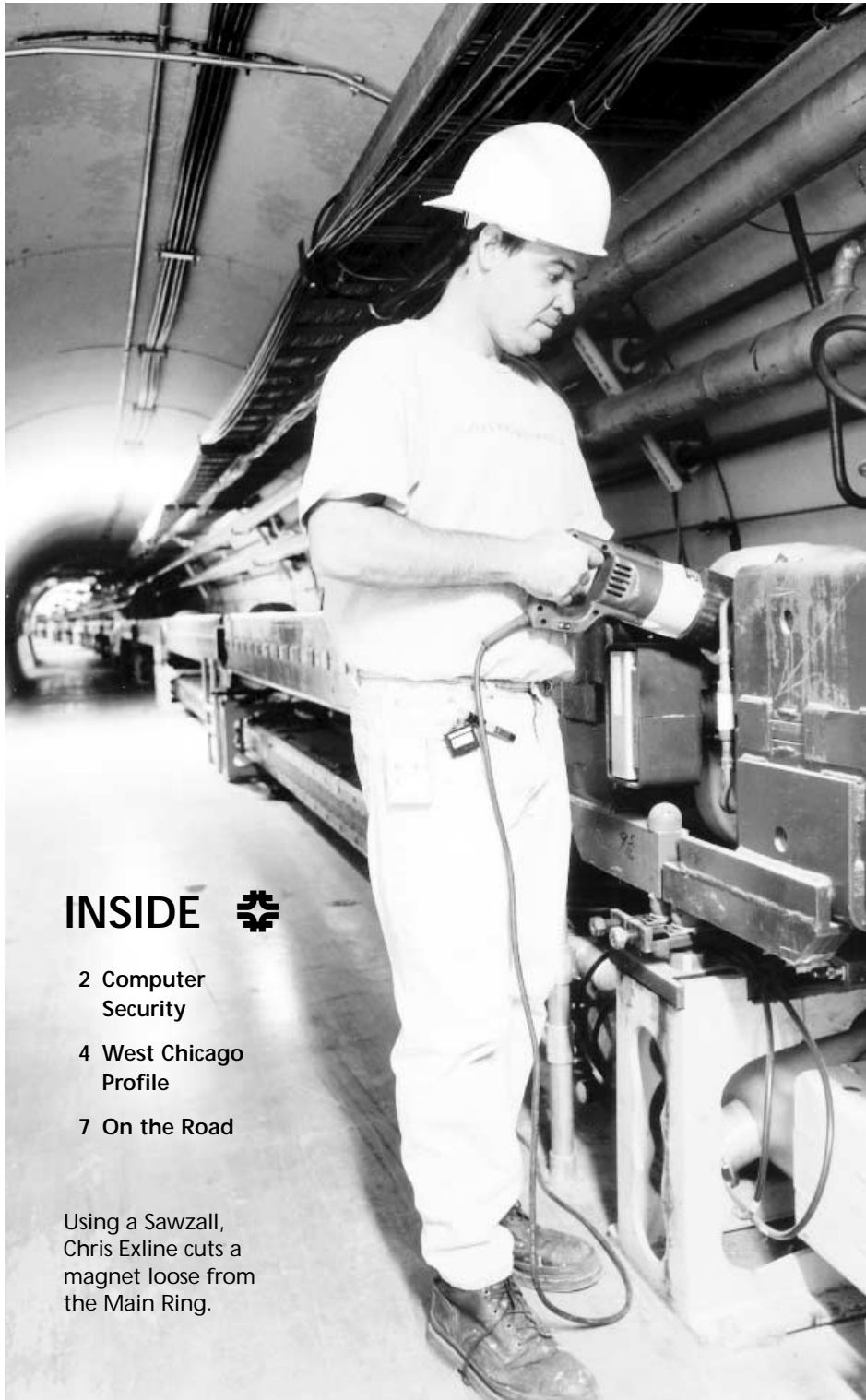


Photo by Reidar Hahn

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Using a Sawzall, Chris Exline cuts a magnet loose from the Main Ring.

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Computer Security Revisited

Under a new plan, Fermilab counters the latest threats from cyberspace.

by Sharon Butler, Office of Public Affairs

In *The Cuckoo's Egg*, Clifford Stoll, a system manager at the Lawrence Berkeley Laboratory in the 1980s, documents how he tracked down an elusive electronic spy ring called the Chaos Computer Club, which was breaking into systems at U.S. military bases and defense contractors and selling sensitive information to Soviet intelligence agents.

As Stoll mentions in passing, before one of the central villains in his story started cruising around the network to uncover military secrets, he was attempting to hack his way into Fermilab.

"When you connected your network to the Internet, you connected it to every hacker in the world," says a brochure from Milkyway Networks, which markets computer security systems. "Professional and amateur hackers alike want to intercept, alter and steal your data. For profit or just for a joke."

That in mind, a working group at Fermilab recently developed a new, technically based computer security plan to protect data and systems critical to the Laboratory's operations. Computer security at Fermilab is nothing novel, of course, but the new plan both formalizes and reinvigorates longstanding practices. Its key elements are special measures to safeguard priority systems, a kind of rapid deployment force to handle suspicious incidents and a set of "strong" rules. Tom Nash, associate director for technology and information, formed the working group, which included Irwin Gaines, computer protection program manager; Mark Kaletka, in charge of networking; Al Thomas, in charge of distributed computing; and Joel Butler, head of the Computing Division.

Critical systems

Under the new security plan, Thomas and members of a sub-working group will be collaborating with division and section heads and their representatives to establish what Thomas calls "specialized protection techniques" for critical systems.



"When you connected your network to the Internet, you connected it to every hacker in the world."

— Milkyway Networks, a computer security firm

Any more about its safeguards for priority systems, however, the working group will not publicly disclose—not what those systems might be, nor what the tight security measures might entail. Identifying the systems would be an open invitation to hackers, who, as Bruce Sterling writes in *The Hacker Crackdown: Law and Disorder on the Electronic Frontier*, would relish the challenge of breaking open what others have locked tight. "Hackers," writes Sterling, "are absolutely soaked through with antibureaucratic sentiment."

"It becomes a game," says Gaines. "The last thing you want to do is to challenge a hacker by declaring 'This system is secure.'"

Rapid response

However, the working group is eager to discuss the creation of the new Fermilab Computer Incident Response Team (FCIRT), which will investigate any "suspicious incidents." A suspicious incident might be an unusual number of false log-ins or the discovery that files you once had access to are now closed—anything, according to the security plan, that "might cause the loss of data, compromise security, or lead to an investigation by legal, law enforcement, bureaucratic or political authorities."

FCIRT, headed by Mark Leininger, in the Computing Division, will investigate all reports. Through a triage system, the team will decide



Photos by Jenny Mullins

Mark Kaletka

the seriousness of the matter. If necessary, the head of FCIRT may take over administrative control of the system involved and bring in technical experts for assistance.

"This team is Fermilab's second fire department," says Leininger. The sooner incidents are reported, the more likely the response team will be able to prevent broad damage. "Even the best hacker takes time to penetrate from one place to another," says Leininger.

"It's just like a fire. If you detect a little bit of smoke, you need to report it before the fire spreads and does some real damage," Leininger adds.

Strong rules

To ensure that FCIRT works, the computer security plan has laid down two rules.

First: Users and employees must immediately report any suspicious incidents, including apparent attempts at unauthorized access, to the Customer Support Help Desk at the Feynman Computing Center (630-840-2345) or to the system manager, if immediately available. System managers must report incidents that can't be simply explained by the system's routine operations.

And second: System managers will be asked to maintain a list of all systems for which they have access and must register with the computer protection program manager (via the Web form at <http://miscomp.fnal.gov/sysadmindb>). That way, FCIRT will be able to reach system managers for help in case of a security breach.

Other than those two, there are just four more strong rules, all of them spelled out in a recent memo sent to employees and users, and included on Fermilab's Web page. There are few rules, says Nash, but "they will be strictly enforced."

Specifically, no one is permitted unauthorized entry to computer systems and accounts. Nor may anyone either use or even possess security or "cracker" tools, unless authorized. Security tools can systematically probe a system or network to ferret out security vulnerabilities. Cracker tools exploit these vulnerabilities, so that an individual can gain unauthorized access to systems and files, destroy or steal data, or attempt other improper activities.

"We have zero tolerance for hacking," says Nash. "We don't want people playing in this area."

Fermilab is also insisting on basic standards of ethical behavior, with computers as without. Individuals may not use their computers to engage in illegal or unethical behaviors, such as fraud, forgery, plagiarism, harassment or libel.

Finally, under the new security plan, central services are restricted. Only authorized



Photo by Reidar Hahn

personnel may implement certain services, including, for example, newsgroups, external network connections and addressing and naming.

Apart from these rules, the security plan leaves much to judgment and common sense. In a policy statement, Nash wrote: "We want there to be unhindered freedom to use computers within a wide area, but this area is surrounded by extremely high walls. We cannot always describe exactly where those boundaries lie, because the technology is changing rapidly and because the walls may shift with shifts in the public's tolerance and areas of scrutiny. Those who use Fermilab's computers and networks will have to use judgment and common sense when they operate near the edges of acceptable use."

Assistance is available from Kaletka, whom the Computing Division has assigned responsibility for education and guidance in computer security matters. Kaletka is working to raise awareness among end users and system managers of the need for such routine security measures as regularly changing passwords and backing up files. End users, he says, are the first line of defense against electronic intruders.

"Most unauthorized accesses can be prevented simply by selecting a proper password [not your spouse's name, for example] and not revealing it to anyone," says Kaletka.

Both he and Nash emphasize that people are responsible for protecting their own data. The directorate gets involved only if someone creates a vulnerability or threat for others.

"If you lose your own data, we're sorry," says Kaletka. "If you enable somebody to damage someone else's data, then we get concerned."

"We aren't jack-booted thugs or the network police," adds Kaletka. In fact, he'd prefer that people think of him as just a guidance counselor for computer security. ■

Networking equipment at the Feynman Computing Center



Photo by Jenny Mullins

Al Thomas



Photo by Reidar Hahn

Mark Leininger

A Junction of Cultures: West Chicago

Sense of community and a multicultural atmosphere are among town's attributes, according to residents.

by Donald Sena, Office of Public Affairs

As DuPage County's population continues to explode—some cities in the county's western portion now claim more than 100,000 residents—West Chicago remains a link to the area's past. With its population barely skirting 17,000, residents and municipal leaders alike proudly refer to the town's sense of community, an attribute that is slowly disappearing from other towns in the broad and bustling Chicagoland region.

Moreover, West Chicago is home to five and six generations of families, who settled in the town years ago and never left—a testament to the town's history, spirit and progress, according to Mayor Steve Lakics and other town leaders.

"It's like finding a small town in the middle of the suburbs," said Michael Fortner, a West Chicago alderman. "It's got that down-state, small-town feel, and a sense of community that you don't find in newer suburbs."

In addition to the tightness of the community fabric, West Chicago boasts a rich multicultural population, with nearly one-third of its residents of Hispanic origin. Donna Hicks, a technician at Fermilab, moved to the western suburbs from the south side of Chicago about six years ago, primarily to eliminate a large commute. Hicks said she enjoys the town's new library and renovated downtown area, but ultimately settled in West Chicago because of its diverse cultures and her desire to raise her son in an integrated school system. Alderman Donna Santiago, a town resident for 24 years, said Hicks's feelings are shared by many.

"West Chicago has a lot to offer. We have history, progress and we are a multicultural town," said Santiago, who mentioned the

European, Indian and Slavic cultures along with the large Hispanic population. "That says a lot of West Chicago that people from many cultures come in and are embraced."

A rich history

Unlike many cities in northern Illinois, West Chicago's history and early economic development are not tied to a river or a lake, but rather to miles of steel rails held together with spikes. The town was the first Prairie State community built explicitly for the railroad, and West Chicago quickly developed around the intersection of three such companies: the Galena and Chicago Union Railroad (later merged into the Chicago & Northwestern and now the Union Pacific), the St. Charles Branch Railroad (later merged into the C&NW) and the Aurora Branch Railroad (now known as the Burlington Northern). In the mid-1800's, railroad executives and workers settled the town as Junction, later renamed Turner Junction after John B. Turner, the president of G&CU Railroad. The railroad officials designed the first town plat and incorporated Turner Junction as the Village of Turner in 1873, according to the West Chicago Chamber of Commerce. In 1896, officials changed the name to West Chicago to link the town with its larger neighbor. From 1884 to 1976, the government was run out of Turner Town Hall. During the nation's bicentennial year, the town hall became the City of West Chicago Historical Museum and is now listed in the National Register of Historic Places.

The railroad continued to feed the town's growth. In the late 1800's, according to the Chamber of Commerce, the Elgin, Joliet & Eastern Railroad linked with the C&NW, and the EJ&E, hoping to attract industry, offered free factory sites to companies that located in the area. The EJ&E was, in essence, the town's first



This is the second in a series of articles on Fermilab's neighboring communities.



West Chicago was called Junction in the 1800s due to the presence of railroads in the town.



COMMUNITY PROFILE

economic recruiter and performed the town's early public relations campaign, promoting the community in advertisements. By the early 20th century, West Chicago was home to a diverse lineup of manufacturers.

Today, West Chicago's economy comprises wholesale trade, food products, rubber and plastic products and transportation companies, among other entities. Major employers include General Mills, Jel Sert, George J. Ball Company and the Liquid Chamber Company. The average family income is \$43,000, and the labor force is composed of "the highest percentage of blue-collar workers among all DuPage cities, with 12 percent skilled blue collar and 25 percent semi-skilled blue collar," according to the Chamber of Commerce.

West Chicago's manufacturing legacy has also left some scars. One particular company, which produced thorium nitrate and rare earths products, contaminated its property with a radioactive substance. As a result, West Chicago has four Superfund sites. The contamination, a byproduct of the company's production process, is being cleaned up by the organization that currently owns the site. A West Chicago historical society member said much of the credit for getting action on the clean-up belongs to a local grassroots organization called TAG, for Thorium Action Group, which comprises a diverse cross section of town residents. Many residents and city leaders interviewed for this article said TAG is one example of West Chicago residents' ability to come together as a community.

"This [organization] proves that the people of West Chicago can pull together and make a difference," said Nancy Assian, a member of TAG and a resident of the town for 25 years.

Future development

West Chicago government representatives said the town has a "significant" amount of land available for development, the bulk of it for commercial and industrial uses. Moreover, Mayor Lakics said it is important for the town to develop that empty space or the industrial boom will continue west and north, leaving the town "sitting with undeveloped land."

One large chunk of that empty space rests just south of DuPage County Airport, skirting Fermi National Accelerator Laboratory's north border in West Chicago's third ward. A recent proposal for a racetrack on the site failed due to resident opposition. Now that land is being eyed by one of the town's earliest residents and economic drivers. The Union Pacific Railroad wants to build a "rail port," or intermodal yard, according to Tom Zapler, special representative

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West Chicago alderman Michael Fortner stands outside the historic city museum. Fortner, a professor at Northern Illinois University, conducts research at Fermilab.



Photos by Fred Ullrich

The West Chicago train station is a symbol of the town's past.



Donna Hicks is a six-year resident.

for UP. Trucks would use the yard to load their containers onto trains bound for points west of Chicago. Conversely, trains would off-load their containers onto trucks destined for points in the Midwest and East. Zapler said the facility would need 200–300 acres, and more for other companies' warehouses. He said the facility would generate \$3.1 billion in the decade-long buildout. After 10 years, it would still support thousands of jobs and generate about \$359 million annually for the area's economy, according to Zapler.

Some residents expressed concern about the truck traffic that would come with the facility. Zapler said the intermodal yard would generate about 30 trucks an hour at off-peak times. He added that the railroad would like to see a new north-south road constructed from Route 88 to West Chicago, such as the DuPage County proposal for a road through the Fermilab property. However, he did say the plan is not tied to a new road.

"The existing road structure is more than sufficient to handle the truck volume," said Zapler.

Mayor Lakics said he needed to see more specifics about the proposal before taking a stance on UP's plans. However, he said the area needs a new north-south road with or without the intermodal yard, as traffic is heavy already. Moreover, the mayor said that a new north-south roadway would reach a critical area of West Chicago and that a proposed road on Fermilab's eastern border is something the county should build soon.

"Having [a north-south road running along Fermilab's eastern border] will prevent Route 59 from being six lanes, which would cut West Chicago in half," said Lakics.

Tom Merrion, an alderman for West Chicago's third ward, said he believes a north-south route is needed; however, he also wants open communication with all parties involved, including the town, the county, Fermilab and the surrounding residents.

"I'm sure we don't want to take out the forest preserve or Fermilab, but there might be some room on the edges" of the Lab for a new road, said Merrion. "I think a good discussion is needed; let's not make this one-sided."

[For an update on road talks, please see the story on page 7].

Fermilab connection

Merrion said he doesn't want all discussion about Fermilab to center around a road. The alderman said his constituents enjoy Fermilab's open spaces, and the West Chicago schools take advantage of having the nation's premier particle physics laboratory in their backyard. He also emphasized the less educational, but more relaxing attributes.

"When my kids were smaller, we fished in Fermilab's lakes a lot," said Merrion.

Manuel Garcia, of the Roads and Grounds Department, lives just outside West Chicago in unincorporated DuPage County. He said many residents are familiar with the Lab's signature buffalo. In fact, he said he was somewhat of a local celebrity when he used to work with the head herdsman caring for the herd. Alderman Santiago said Fermilab's restored tallgrass prairie and cutting-edge physics are also popular attractions.

The residents "are amazed at the land out there and the science that is being done," said Santiago. ■



Mayor Steve Lakics.

Photo courtesy of West Chicago

West Chicago's downtown epitomizes the small-town feel.



Photos by Fred Ullrich

On the Road

DuPage County has begun a feasibility study for a proposed north-south route through Fermilab.

by Judy Jackson, Office of Public Affairs

Officials of Fermilab and the U.S. Department of Energy met with representatives of the DuPage County Department of Transportation and HNTB Architects, Engineers Planners, a Chicago firm, on Friday, September 19, to discuss arrangements for a transportation feasibility study that began on September 29 at the Laboratory. DuPage County has contracted with HNTB to perform a preliminary evaluation of the eastern and western boundaries of the Laboratory to determine whether DuPage County should proceed with a proposal for a north-south highway that would pass through the Fermilab site. The cost to the county of the data-gathering effort, which HNTB staff estimated would take eight to nine months, is \$102,765.

Not up the middle

During the past year, DuPage County officials have discussed with Fermilab and DOE the county's desire to construct a north-south highway that would connect Butterfield Road on the south with Roosevelt Road north of the Laboratory, passing through the Fermilab site. In previous discussions at Fermilab, County Board Chairman Gayle Franzen, DOE Chicago Operations Manager Cheri Langenfeld and Fermilab Director John Peoples agreed that the County would examine only potential routes along the Laboratory's eastern and western boundaries, eliminating an initial proposal by the county for a route through the center of the site. Such a route would severely compromise the Laboratory's current and future operations as a national high-energy physics laboratory, Fermilab and DOE officials said.

At the September 19 meeting, Laboratory and DOE officials reminded

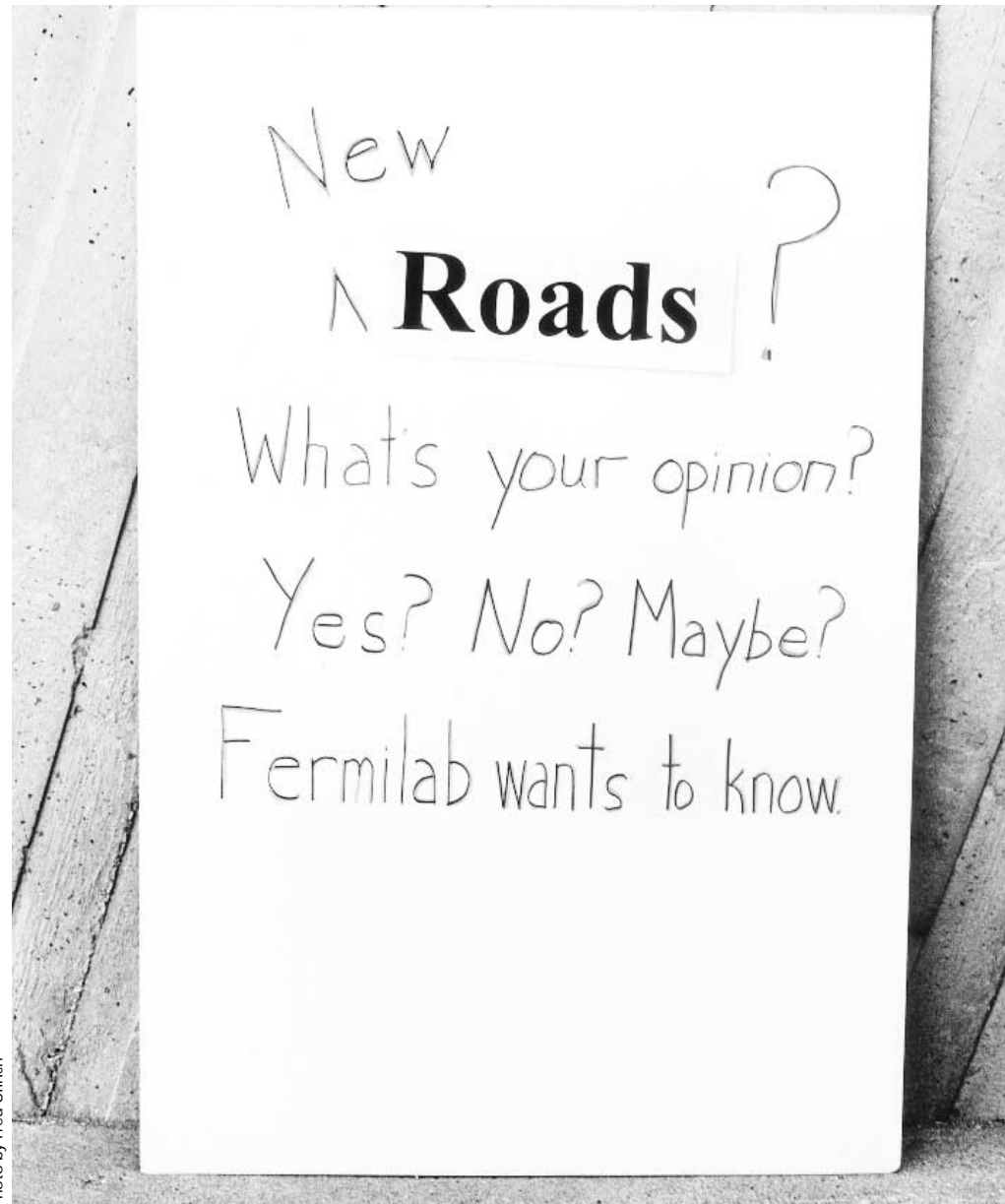


Photo by Fred Ullrich

At Fermilab's Open House, Lab and DOE officials solicited the public's opinion on the road issue with this sign and a corresponding information booth.

county staff members of the agreement to study only the eastern and western proposed routes, and county engineer Charles Tokarski agreed to limit the feasibility study to those routes. Richard Stenzel of DOE's Chicago Operations office delineated the strips of land, parallel to the eastern and western boundaries, that the study may address.

Seeking community views

Fermilab officials emphasize that the Laboratory and DOE, which owns the Fermilab site, have not agreed to the construction of a north-south road through the Laboratory site. If, following the current feasibility study, DuPage County decides to proceed with a proposal for a route on the east or west

boundaries, Fermilab and DOE have said they will consider the proposal.

The ultimate decision whether to allow construction of a north-south highway would involve many factors, Laboratory officials said, among them environmental issues and the solicitation and consideration of the range of community views on the proposed road.

Fermilab has begun meeting with local community groups to inform them of the proposed north-south corridor and to learn their views. Fermilab encourages members of the Laboratory community and the public who have questions or opinions on the proposed highway to call the Laboratory's Office of Public Affairs at 630-840-3351. ■



Theo Gordon, of the Mechanical Support Department, helps guide a magnet off its stand in the Main Ring and onto a flatbed lift.



Matt Ferguson, of the Radiation Protection Group, checks a magnet for radioactivity.

Photos by Reidar Hahn



This is how the Main Ring/Tevatron tunnel looked before crews began dismantling the Main Ring accelerator.

Main Ring

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protons to the antiproton production target and connecting the Main Injector to the switchyard for fixed-target experiments.

Also, a 600-foot length of the tunnel largely in the F sector, right around FZero, will have to be reconfigured to squeeze in beam transfer lines connecting the Main Injector and the Tevatron. That means that the sections of the Main Ring and the Tevatron that lie in this area have to be removed for now—and returned later, when the tunnel is reshaped. With a \$9-million demolition and civil construction project slated to begin in mid-October, workers are already emptying out the area. Every piece of equipment has to go—many have already gone—from ion pumps and magnet stands to knobs and valves.

Quadrupoles and dipoles

For Phil Martin, in charge of ensuring that the magnets are pulled and properly placed, “getting organized was the hardest part.” About one-third of the magnets in the Main

Ring are being removed: all 192 of its quadrupoles, the magnets that focus the beam, and about 100 dipoles, the magnets that guide the beam around the accelerator’s circumference. The vast majority of these will find their way into the Main Injector or the new transfer lines, or back into the newly reconfigured F sector. In one way or another, the Technical Division will have to rework all the recycled magnets, if only to replace their vacuum connections, which have suffered 25 years of corrosion. The few remaining will have to be disposed of, but where and when has not yet been decided. For the present, they will sit on-site, in the “boneyard.”

Martin had to consider numerous factors in deciding the selection and placement of the magnets. Magnetic properties were one factor, but the lack of records identifying which magnets were which complicated Martin’s task. “Not all quadrupoles in the Main Ring are equal,” says Martin.

Not all dipoles are equal either, the magnets having six different styles of insulation and joints in their coils. The original design, Martin says, was “not so good.” The later ones were much better.



Photos by Reidar Hahn

A quadrupole, hoisted from the tunnel to ground level, hovers in space as Keith Dillow guides it to temporary storage. From here, the magnet will be transported to the Technical Division for reworking.

Magnets destined for the Main Injector have to be of the highest quality. Since the beam will circle the new accelerator 90,000 times a second, even the tiniest imperfections can cause disruptions that multiply each time the beam makes a pass. All but one of the quadrupoles tested so far have worked fine even when pushed to performance levels of the Main Injector.

Those in the transfer lines between the Tevatron and the Main Injector also have to be particularly fit. Not only will these magnets be highly stressed, says Martin, but the area is difficult to reach, making repair difficult once beam is turned on again.

Timing was another factor Martin had to consider. Construction would close down sections of the tunnel at certain times, making it necessary that workers get in to remove magnets before the area was sealed.

Martin's analysis of all the variables resulted in a 13-page spreadsheet detailing for the mechanical support crews which magnet goes where and when: "a lot of shuffling," says Martin.

He is thrilled with progress so far: "They promised me six magnets a day, but some days they've been pulling out 10."

Water

In decommissioning the Main Ring, Fermilab's Beam Division has to empty out about 50,000 gallons of low-conductivity water that has been running through the magnets to cool the coils. Where to dispose of it is the question.

Under the Clean Water Act, Illinois regulates the discharge of pollutants into the state's rivers, lakes and streams. Fermilab's current permit allows the Laboratory to empty what is called "non-contact" water directly into the environment without treatment—specifically, into its own drainage ditches, which link with the state's waterways. But non-contact water, as defined in the permit, includes only the cooling ring water, which does not come in contact with the accelerators' magnets.

Fermilab's low-conductivity water has traces of copper and is slightly radioactive, with tritium concentrations averaging from 100 to 150 picocuries per milliliter. These amounts are so low that William Griffing, head of the Environmental, Safety & Health Section, said the water could safely be emptied directly into Fermilab's drainage ditches without harming the environment. To dispose of the water in the



Bob Slazyk (right) and Drue Wallace, of the Mechanical Support Department, drain low-conductivity water from the tunnel into a 7,000-gallon tanker.

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Main Ring

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drainage ditches, however, Fermilab's permit would have to be modified.

Fermilab is now in the process of amending its permit, but until that is accomplished, says Griffing, the Laboratory is erring on the conservative side, disposing of the water in the sanitary sewage system instead. Federal standards for tritium are 2,000 picocuries per milliliter for discharges directly into the environment and 10,000 picocuries per milliliter for discharges into a sanitary sewage system. The state standard for the release of copper into Illinois waters is .034 milligrams per liter. Municipalities allow 2 milligrams per liter discharged into their sewage systems.

Concentrations in Fermilab's low-conductivity water fall well within all applicable limits, says Griffing.

Yellow hoses are draining the water into huge, shiny stainless steel tankers, like oversized milk trucks, each capable of carrying 7,000 gallons. The tankers roll up to the Main Ring, and cart the water off to be discharged into a manhole on-site, where the water ultimately flows into Batavia's sanitary sewage system.

Bob Slazyk, who oversees the process, is quick to praise one of his technicians, Frank Schneider, who proposed using the tunnel's existing sump pumps, rather than buying a \$50,000 device, to pump the water up to the tankers. That method, Slazyk says, "saves time, energy and money."

Of course, many questions remain. What should be done with the magnets in the remaining five-sixths of the ring? Leave them in place, or ship them, at great expense, to Washington for disposal in a federal facility for low-level radioactive waste? Can the low-conductivity water, perhaps, be saved, and used again when the Tevatron turns back on, instead of disposing of all 50,000 gallons?

Meanwhile, however, the night crews alternate with the day crews, keeping out of each other's way as they empty out FZero.

"We have quite a bit of work to do in this shutdown," says Larry Sauer, a mechanical engineer, but he's confident. "Somehow, it all seems to get done. The technicians have always been good. They know the schedules."

Lawrence says he sometimes chuckles to himself as he walks down into the tunnel. This machine his crews worked so hard to keep in repair over the last couple decades is now "full of big gaping holes." ■



Greg "Red Dog" Lawrence (left) and Theo Gordon, of the Mechanical Support Department, examine remaining equipment in FZero, now emptied of its radiofrequency cavities, seen in inset.



Chuck Broy (left) and Dwayne Newhart, both operators who have been recruited for demolition work, cut out cables from FZero.

Photos by Reidar Hahn

Chez Léon

M E N U

Lunch served from
11:30 a.m. to 1 p.m.
\$8/person

Dinner served at 7 p.m.
\$20/person

For reservations, call x4512
Cakes for Special Occasions
Dietary Restrictions
Contact Tita, x3524

Lunch Wednesday October 15

Pork Loin with Apple Salsa
Spatzle with Bacon and Onion
Currant Lemon Cake

Dinner Thursday October 16

Booked

Lunch Wednesday October 22

Game Hens with
Tamarind Glaze
Wild Rice with Raisins
Apple Almond Strudel

Dinner Thursday October 23

Wild Mushroom Tart
Grilled Sea Scallops on Greens
Ginger Persimmon Cake

LAB NOTES

Calling All Volunteers

Volunteers needed to staff the West Chicago PADS homeless shelter. Our site is open every Thursday evening to Friday morning from October–April. Each evening is divided into four shifts: 6:30–9:00 p.m., 9:00 p.m.–1:00 a.m., 1:00–5:00 a.m. and 5:00–7:30 a.m. Volunteers are asked to work only one shift per month. The greatest need at this time is the 9:00 p.m.–1:00 a.m. shift. People are also needed to act as substitutes when normally scheduled volunteers are unavailable. Please contact Brian Hendricks, x2448 or hendricks@fnal.gov, for more information.

Winter Basketball League

Play begins October 30. A captains' meeting will be held at noon, October 24, in the gym. Games are on Thursday nights in the gym. Teams or individuals interested should contact Fred Lewis, x3975 or flewis@fnal.gov, or the Recreation Office, x2548 or jeanm@fnal.gov. Participation requires a current 1998 Recreation Facility membership.

Winter Doubles Tennis League

Play begins October 12. Deadline for sign-up is October 8. Games are on Sundays from 4–8 in the gym. Partners are randomly chosen each week. For more information or to sign up, contact Steve Kuhlmann, kuhlmann@fnal.gov, or the Recreation Office, x2548 or jeanm@fnal.gov.

Participation requires a current 1998 Recreation Facility membership.

Entertainment Books Available

The Entertainment Book offers hundreds of great dining discounts allowing you to dine out at a price of two-for-one. What better way to get out and try new restaurants! You also save on movies, theatre, sporting events, local attractions, travel, shopping and more! Start dining out for less every night—get your Entertainment Book today. Contact the Recreation Office, x5427 or x2548, WH15W.

Improve Your Chances for an Illness-Free Winter!

Flu shots will be offered by the VNA on November 4, 1997, in WH1West. Pneumonia and tetanus vaccines will also be available. Appointments will be made in 1/2-hour increments. Contact x3232 or akarsten@fnal.gov.

Is Your Smoke Alarm Working?

More homes have smoke alarms than ever before, but nearly half don't work. Without a working smoke alarm as an early-warning signal, fire can spread unnoticed through the household, blocking escape routes and filling rooms with deadly smoke. Make sure you are protected. Start a lifesaving habit October 26. When you change your clock from daylight-saving time, change the batteries in your smoke alarms. A message from the Fermilab Fire Department.

CALENDAR

OCTOBER 10

NALWO potluck dinner, w/appetizers & drinks, Kuhn Barn at 6 p.m. Dinner at 6:30 sharp. Bring food to share, either a main dish for 6–8 people or a side dish or dessert for 12 people. For kids we have pizza, for everyone, soft drinks & for adults, wine. Babysitting is provided. For further info, contact Angela Jostlein (630) 355-8279.

OCTOBER 11

Fermilab Art Series presents: *Pilobolus Dance Theater*, \$21. All performances begin at 8 p.m. in Ramsey Auditorium, Wilson Hall.

OCTOBER 17

Fermilab Lecture Series presents: *Music for Meantone Tuning: An Excursion through Europe in the Sixteenth and Seventeenth Centuries*. A lecture/demo by David Schrader, harpsichord/clavichord, at 8 p.m. Admission is \$5.

OCTOBER 24

Fermilab International Film Society presents a Halloween double feature: *La Jetee*, Dir: Chris Marker, France (1963), and *The Cat People*, Dir: Jacques Tourneur, USA (1942). Admission \$4, in Ramsey Auditorium at 8 p.m.

THIS FALL

Step aerobic classes on Mondays & Wednesdays and muscle-toning classes on Tuesdays & Thursdays from 5:30 to 6:30 p.m. in the Recreation Facility. Two fall sessions offered, Sept. 8–Oct. 31 (\$48) and Nov. 3–Dec. 16 (\$36). Registration & payment can be made at the Recreation Office, WH15W; or mail name, class and check payable to Bod Squad, to MS 126. Must have current membership. For more info, call x2548 or x5427 or e-mail jeanm@fnal.gov.

ONGOING

NALWO coffee mornings, Thursdays, 10 a.m., in the Users' Center, call Selitha Raja, (630) 305-7769. In Kuhn Barn, international folk dancing, Thursdays, 7:30–10 p.m., call Mady, (630) 584-0825; Scottish country dancing Tuesdays, 7–9:30 p.m., call Doug, x8194.

LETTER TO THE EDITOR

I had a really good time at the open house. Even though I am only 11, I love physics. Do you guys that answer the e-mail know a head physicist by the name of John? Also, do you guys use Snap-On tools? I also get Fermilab news; I was in it!

Anne Gaynor

P.S. I really want to work there when I get older, so save a spot.

CLASSIFIEDS

FOR SALE

■ '93 Ford Ranger XLT, extended cab, 4.0-liter V-6 engine, 5 speeds, power steering, power brakes, AC, AM/FM cassette, sliding rear window, tonneau cover, bed mat, 41.5K miles, exc. cond., \$9,500 obo. Call Ron, x8864 or (630) 466-1823.

■ '91 Ford XLT Club Van, 8 passengers, 59K miles, loaded, new tires & exhaust, 302 V-8 engine, religiously maintained, used for pleasure/never worked, 2-tone gray, dual gas tanks, much more. Kept indoors, one owner. \$12,500 obo. (630) 513-1000.

■ '86 Mazda RX7, mechanic's car, 5 speeds, cruise control, sunroof. Handles & runs great! Newer engine, fun to drive. Some rust. A steal at \$2,000 obo. Contact John, (630) 820-1258, pager (630) 538-2373, or voirin@fnal.gov.

■ '85 Mustang GT 5.0, 5 speeds, 3-door SVO, cobra clutch/pressure plate/billet flywheel, upgrades. Runs good, needs some body work though. \$1,500 obo. Also: '95 Formula Z 583 cc Snowmobile. Like-new condition, cover. \$3,200/obo. Contact rjk@skognet.com to see these items on the Web, or call 722-4685 (long-range pager).

■ Moving sale, everything must go! Oak cocktail table (34"x36") w/glass top, v. good cond., \$20 (no matching end tables). "Caloric" brand, full-capacity microwave oven + cart, \$75. Small "toastmaster" microwave, \$20. Five-piece dinette, white tile & wood table top (31"x49"), 4 white wooden chairs w/removable pads, v. good cond., \$85. Aerobic rider, \$50. 19" color TV w/remote, \$40, and 13" color TV w/remote, \$20 (not major brand or cable-ready, but work great). Large mirror wall clock, long rectangular shape w/pendulum, \$20. Black/gray stereo cabinet w/glass door & adj. shelves, exc. cond., \$40. Brass halogen floor lamp, \$10. Heavy brass table lamp w/nice burgundy shade, unique shape, \$30. Large Weber kettle grill, \$30. 2-drawer file cabinet, dusk blue, \$10. Natural wood CD rack, holds approx. 200 CDs or videos, \$25. Very unique table made of two-tiered "cypress wood" pieces, \$75. Free-standing, above-the-toilet metal shelf unit, white removable shelves w/brass accents, exc. cond., \$25. "Bionaire" humidifier, \$15. Other small misc. items available: 2 sets of dinnerware, flatware, 2 knife sets, 1 in wood block, cordless rechargeable elec. can opener. If there is anything you can use, no reasonable offer will be refused! Please call (630)443-9881 and leave message.

■ Kenwood multi-component stereo system w/cab., includes linear tracking turn table, amplifier ka-94, synthesizer, am/fm tuner kt-54 (memory holds 14 am & 14 fm stations), graphic equalizer ge-34, dual-deck cassette recorder kw-64w, CD player dp-840, 2 4-way 150-watt speakers jl-840, \$2,000 obo. Atomic Arc 195 skis, Salomon 547 sport bindings, size 12 US or 13 EU and Trappeur 2000 boots (also have ski & boot bag), \$200 obo. Head skis, older-style bindings, \$25. Contact Terry, x4572 or skweres@fnal.gov.

■ Plastic step (for step aerobics, sturdy, OK condition) w/2 videos, best offer. Amethyst/diamond, 14 kt. gold ring, \$100. Magnavox home security system, completely wireless, never used, brand new product on the market, retails for \$575, selling for \$300, will install for add'l \$75. Emerson 4-head VCR w/remote, 3 yr. old, used for only 3 mos. \$75. Contact Marcia, x5417 or marcia@hep.net.

■ 1930's Moore gas kitchen stove. Moore's first gas model, 4 burners, side oven and broiler. Good working condition. \$300 firm. Contact Gerry, x3930, (630) 232-4061 or gerryb@fnal.gov.

■ Kenmore refrigerator, 19.6 cu. ft., frostless, with freezer on top. \$75. Call Bruce, x2359 or (630) 858-7860.

■ Sleeper sofa, queen size, brown checked pattern, good condition. \$75 obo. Call Boris, x8704 or (630) 892-5461.

■ Golf clubs, Titleist CDI irons, 2 thru SW, excellent cond., \$300; radar detector, Whisler model 945, new, \$75. Call Jim, x4293 or (630) 585-0907.

■ Kitchen Aid refrigerators, 27 cu. ft., white w/top freezer and 22 cu. ft., almond side-by-side w/auto ice maker, both exc. cond., \$400 each obo. Maytag disposal, never installed, \$150 obo. White Westinghouse washer, large capacity, \$50. Contact Dan, (708) 488-9884 or kaplan@fnal.gov.

■ House, 4-bedrm ranch in Batavia, 2 bathrm, large eat-in kitchen, living room, family room. 2-car detached garage with storage room. Large yard w/mature trees. Geneva schools. \$129,900. Call Peter or Penny, (630) 879-0837 (evenings).

WANTED

■ Double baby stroller, front-back (not side-by-side). Contact (630) 357-4206 or drucker@fnal.gov.

MILESTONES

RETIRING

Stephen Lusted, ID #4914, of the ES&H/Fire Group, on October 31, 1997. His last work day is October 15.

DIED

Richard "Red" Isminger, ID #241, formerly of Technical Support/Magnet D & F, on Saturday, September 27, in Boonesboro, Md., while on vacation. Don Olson remembers him as a "team player" who took "great pride in the success of the facility and in the people who made it happen." Jack Jagger said Isminger "always found a way to get an impossible task done."



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Please send your article submissions, classified advertisements and ideas to the Public Affairs Office, MS 206 or e-mail ferminews@fnal.gov

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