

Ferminews

FERMI NATIONAL ACCELERATOR LABORATORY

DOE gives Main Injector environmental stamp of approval

Fermilab's Main Injector Project moved one step closer to reality on July 6 when the Department of Energy, after an extensive environmental assessment, issued a Finding of No Significant Impact. The FONSI means that DOE has determined that the proposed construction project will not significantly affect the quality of the human environment under the National Environmental Policy Act of 1969.

"We are delighted with this development," said **Steve Holmes**, Main Injector Project Manager. "Issuance of the FONSI clears the way for the start of physical construction of the Main Injector."

The FONSI is the end result of an extensive and demanding study which started with Fermilab's and DOE's preparation of an Environmental Assessment. The process began in December 1989, before the president included the Main Injector in his budget request. "I knew preparing an EA would take a lot of time and effort, from past experience," said **Andy Mravca**, DOE's Batavia Area Office manager. "I insisted that we start early, in view of the fact that we had 2 1/2 years of hard, intense work. It would take a lot of hours; a lot of people have to be satisfied."

Much of the hard work it takes to prepare an EA fell to **Bill Fowler**, associate head for administration for the Main Injector Department. "Dr. Fowler did one Herculean effort," Andy said. He also credited **Dennis Theriot** (Directorate).

Andy was concerned because Fermilab had not undergone an EA since 1972. Since then, the number of environmental requirements have multiplied and their complexity has increased greatly. "But the Lab people did their homework," Andy said. "They made sure that the physics could be done in harmony with the environment."

"It was clear that the EA couldn't be done instantly," Bill Fowler said. Fermilab hired consultants from Envirodyne Engineers, Inc. to help prepare both the EA and a permit for construction on or near wetlands. The Lab also retained David J. Engel, then an attorney from Chicago law firm Sidley & Austin, to handle matters of environmental law and help polish the actual EA document.

In addition to the Main Injector Department and

outside agencies, the ES&H Section played an important role in the preparation of the EA. ES&H participated in the development of the EA by providing site background information on the environmental conditions that might be affected by the construction of the Main Injector. This information included surveys of historic and prehistoric sites, flora and fauna surveys and the potential impacts of the Main Injector in terms of ionizing radiation and waste generation.

The ES&H Section also provided guidance in the general process to be followed in the conduct of the EA. ES&H Head **Don Cossairt** and staff members **Deb Grobe** and **Rod Walton** were involved in these efforts.

DOE required that the EA address several possible environmental dangers. One important one was the destruction of wetlands. Federal law requires that developers must replace any wetlands damaged or destroyed at a ratio of 1.5 to 1. The construction of the Main Injector will alter approximately six acres of wetlands, so Fermilab must create nine. With help from Envirodyne and Fluor-Daniel, Inc., an architecture and engineering firm, Fermilab prepared a wetlands mitigation plan, which the U.S. Army Corps of Engineers approved last year.

Destruction of wetlands, covered by the Clean Water Act, was not the only environmental factor Fermilab had to consider. The EA also addressed radionuclides emissions standards, obstruction of flood flows, construction of dams, farmland protection and the safeguarding of a great blue heron rookery inside the proposed ring.

On April 22, 1992, DOE published a proposed FONSI for the Main Injector in the *Federal Register* for a 30-day comment period. DOE received no negative comments, but the governor's office and area state representatives wrote to express their pleasure at the preliminary FONSI. Fermilab employees were not surprised that the only comments received were encouraging. "Clearly, what we're doing is positive, not negative, and people were Continued on page 10

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Gaines named Computer Protection Program Manager

Irwin Gaines (CD/SDC Associate Head) has been named Computer Protection Program Manager, effective July 1, 1992. Irwin replaces **Jack Pfister** (Directorate), who will remain an advisor and consultant for the program through September.

The Computer Protection Program is the result of DOE Order 1360.2A, issued in 1980. The order, titled "Unclassified Computer Security," mandated that Fermilab devise a program to ensure both the physical security of computer hardware and the privacy of personal files. The CPPM, supported by six assistants, supervises the protection program.

Irwin has been a full-time employee of the Lab since 1975, and was involved in Fermilab research as a graduate student before then. He earned his Ph.D. in physics under Leon Lederman at Columbia University. Irwin worked on Experiment 87 with current Director **John Peoples**, then transferred to CDF in 1976. In 1983 he joined the Advanced Computer R&D Department of the Research Division, where he worked with **Tom Nash**, who now heads the Computing Division, and helped develop the first multiprocessor farms. When the Computing Division was created in 1989, Irwin took on a series of administrative roles.

As CPPM, Irwin will administer the program Jack Pfister created in response to the DOE order. "We have no classified information here," Irwin said. "However, DOE is still concerned about computers that deal with unclassified information." In

addition to making sure computers are not stolen or used for unauthorized purposes, the Computer Protection Program exists to help protect files from viruses or worms, mischievous "hackers" or simple accidents.

While no Fermilab files are classified, some, such as personnel files, are labeled "sensitive." The Computer Protection Program also is concerned with keeping those files private.

Irwin's duties as CPPM include making sure the Lab's computer purchases meet the requirements of the Protection Program, testing and documenting program procedures, auditing, reviewing and inspecting hardware and files and responding to incidents of improper use.

Fermilab files must be made available to researchers all over the world, so Irwin's job of providing proper security while maintaining access for those who need it is tricky. "We try to run our computer systems in a relatively open manner," he said.

Irwin is taking on new responsibility, but he will remain QA Officer for the Computing Division. He will also continue his research on E687 and in computing and data acquisition for the SDC.



Finley Markley to retire

When the workday ends on August 28, 1992, Fermilab will lose an inventor, an environmentalist, a jewelry maker, a civil rights activist, and a teacher, mentor and friend to several dozen summer students.

Finley Markley (TS/Engineering), who will retire late this summer, has played all these roles during his 12 1/2 years at the Laboratory. Finley's contributions to science during the course of his career are remarkable, but he will be remembered for much more than the research which brought him nine patents, an I-R 100 (now R&D 100) award and a congratulatory letter from former President Richard Nixon.

"I'll miss the students the most," said Finley. According to **Tom Nicol**, head of engineering in the Technical Support Section and Finley's current supervisor, Finley has welcomed around eighty stu-

dents, ranging from high schoolers with little or no science background to a college professor, into his Materials Development Laboratory.

To help maintain the flow of promising students, Finley served as chair of the Minority Graduate Fellowship Committee and the Minority Summer Institute for Science and Technology Committee. He advised participants in the INTECH science fair for high school students, and was an Explorer Scout Leader. For several years

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Physicist OK After Ordeal in Rocky Mountains

Theresa Fuess is a former post-doctoral researcher at Fermilab, currently working for the SSC on CDF. She just spent a frightening week and a half stranded atop the Continental Divide northwest of Boulder, Colorado.

Theresa had set out for a six-day hike in the Indian Peak wilderness in mid-June with her sister, Ruth, Ruth's friend, Douglas Zang and three canine companions.

The trip began as planned, but on the second day as they approached the Continental Divide, they lost their trail in a snow bank. Fatigue, approaching darkness and fear of getting lost kept the group from retracing their steps back over the snow bank. They chose to make their way down the west side of the mountain, an area that is typically less snowy. As they descended down the slope, the terrain turned steeper. Suddenly, the hikers realized they were no longer descending down a gentle slope, but rather a steep, rocky and snowy gully. With no way to turn around and go back up, the group had no choice but to slide down the slope using their feet to control their slide. Then came what Theresa called the most frightening part of the ordeal; from her position on the gully, she could see that only a few feet away, the snow gully had become a waterfall, with a 700-foot vertical drop. "Fortunately," Theresa said, "One side of the gully was no longer a cliff, but had some rocks and tundra."

That night, the group remained huddled together in a two-person tent pitched in a snow bed, hoping no one rolled over. "We sat awake all night because we didn't want to roll over the edge of the gully and down the falls."

The next day, they found a snow-free ledge that was big enough to accommodate the tent. "The ledge was triangular in shape with a 30-degree slope," Theresa said. But as soon as the tent was moved to the ledge and tied to boulders with ropes, a blizzard began that lasted 24 hours.

"The winds were blowing the rain and snow straight through the tent fly," Theresa said. "Every time the wind hit, it sounded like the tent was going over the edge."

After the storm, the trio spent most of their time yelling for help. "We could see the trail down below us in the valley, so we kept hoping somebody would hear us. We had a whistle that we would blow three times every minute, and we rotated whistle duty."

In hopes of attracting attention, they also spent time flashing a mirror at airplanes that flew overhead. "Every time we heard an airplane, whether we

were in the tent or out of the tent, everyone would jump to attention and flash this mirror. None of them saw us. It was only when they were actually looking for us that they saw the mirror."

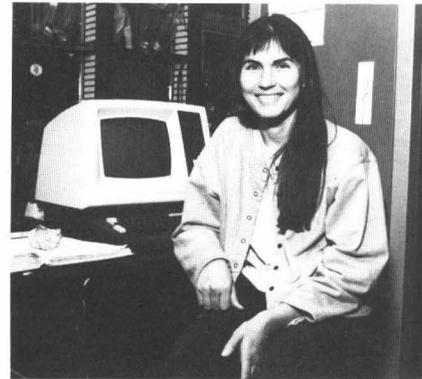
To pass the time, they read books and enjoyed the companionship of the dogs. "The dogs were a really big comfort," Theresa said. "And they were good. The two little dogs, five-pound Yorkies, thought we were still on holiday. We tied them to the tent because they would look over the cliff like they were curious what was down there. All I could think of was that maybe their eyesight wasn't very good and they would jump. The big dog, a Shepherd-Rottweiler mix, clearly understood there was a problem. He would walk up to the edge of the cliff, look, and then sort of just scoot backwards. He was a sad dog."

Theresa said they rationed their food to make it last through the fourth of July, but they had to make trips to the waterfall each day for drinking water.

Fortunately, their food supply did not have to last them that long. On Tuesday evening, June 30, after eight days on the ledge, they spotted two helicopters flying over the trail in the valley. Just as they had hoped, people at work had finally reported them missing. The helicopter was a mile or more away when Theresa flashed the mirror, hoping the rescuers would see it. The rescuers saw the flash of the mirror and came their direction, but had to circle overhead four times before spotting the trio.

"They weren't expecting us to be perched on this ledge," Theresa said. "So they circled several times. We couldn't figure out what they were doing. We didn't know whether they wanted us to pack up or whether they were going to get us that night. We just had this total feeling of excitement and confusion. Then the helicopters left and we decided they weren't going to pick us up then, so we went to bed."

Theresa said that after they were all settled in the tent that night, they heard a voice. The voice belonged to Chuck Demarest, a 25-year member of the Rocky Mountain Rescue Group, a group of local residents who volunteer their time rescuing people stranded in the Rocky Mountains. Demarest spent the night with the group after radioing to the rest of the rescue group that the trio and their dogs were in good condition and did not require medical attention.



Even after spending ten days stranded 11,500 feet above sea level on a small ledge in the Colorado Rockies, Theresa Fuess has no qualms about hiking again. In fact, she is waiting for the day when she can get back on that mountain, and this time conquer it.

Continued on page 5

Fermilab tackles Digital Sky Survey



Ruth Pordes (left) and Rich Kron discuss plans for the Sky Survey's data acquisition system.

What is the large-scale structure of the Universe? How has this structure evolved since the Big Bang? Was the structure produced by gravity, or by an unknown subatomic particle?

Fermilab is part of a consortium that is embarking on an ambitious project designed to answer these and other questions. The Sloan Digital Sky Survey, a project designed to chart the universe and the structures within it, will provide a map of the universe with unprecedented detail and accuracy.

No one person takes credit for proposing to tackle such a scientific challenge. "Some people blame me, but I blame other people," said **Rich**

Kron (CD/Experimental Astrophysics), who introduced the idea of the Sky Survey to Fermilab. "I think it occurred to a number of people at the same time." Rich, a professor of astronomy and astrophysics at the University of Chicago, became "inspired to pursue the idea" in 1988. He and colleagues Jim Gunn and Don York called twelve experts from around the country to a conference near O'Hare Airport later that year. Dubbed the "O'Hare group," the twelve "cooked up the project" in 1989 and 1990.

The project the group envisioned entailed building and operating a 2.5 meter (100-inch) telescope dedicated to mapping uniformly and in detail a 100-times larger volume of the universe than available from current surveys. "Astronomers don't normally build special purpose telescopes (because of the large astronomer-to-telescope ratio), but some projects require a dedicated facility," Rich said. The Digital Sky Survey telescope will harbor sophisticated Charge Coupled Devices (CCD detectors). The CCD detectors will obtain images using 30 detectors each with 2000 by 2000 picture elements for a total of 120 million picture elements. The human eye is capable of a resolving power of only 2500 by 2500 picture elements.

Such a large undertaking can be expensive. According to Rich, at the time the O'Hare group was developing the project, "we had no idea where the funding was coming from." The Alfred B. Sloan Foundation, which has funded many small but important research projects in the past, responded to a request for help with an \$8 million grant. The Astrophysical Research Consortium will provide human and material resources. The three ARC institutions playing major roles in the project are the University of Chicago, the Institute for Advanced Study and Princeton University. Other institutions include Johns Hopkins University and the National Astronomical Observatory of Japan. ARC decided to build the

Sky Survey telescope at Apache Point, atop the Sacramento Mountains of southern New Mexico.

The O'Hare group had managed to recruit astrophysicists and cosmologists, choose a site and secure a large portion of the necessary funding. One necessary resource, however, was missing. "There was a need in the project for someone to pay attention to computing," Rich said. "No university wanted to take it on." This is where Fermilab came in.

"**Dave Schramm** (RD/Astrophysics) deserves some credit for talking to **John Peoples**," Rich said. After persuading the Fermilab director that the Lab had a "mutuality of interest" in the Sky Survey, Rich and his colleagues set about looking for areas in which Fermilab could contribute. One result of the search was the Experimental Astrophysics Group, which Rich heads. The Digital Sky Survey is the group's flagship project, but not its only project.

The other area is computing. "Fermilab had something to offer," Rich said. "They could provide a data acquisition system, software and hardware. So Fermilab became a partner in the project."

The Computing Division's Online Support Group, headed by **Ruth Pordes** and **Don Petravick**, is playing a primary role in the Sky Survey. Approximately eighteen months ago, "**Tom Nash** (Computing Division Head) asked Online Support to collaborate with the astrophysicists to provide a data system for the experiment," Ruth said. Currently, the group is developing functional specifications for various areas of the data acquisition system, to be presented to the collaboration at the end of August. The system the Online Support Group develops must recognize, sort and catalog the distinctive shapes and colors of stars, galaxies, nebulae and quasars.

Although the data acquisition system will be installed in New Mexico, the data analysis will take place here. If the project progresses on schedule, the telescope will begin to take data in November 1994. After a year of testing, data acquisition will continue for five years, and analysis will most likely continue for many years after that. "The data will be made available to the whole field," Ruth said. "There is a twenty-year commitment to provide access, and it is expected that Fermilab will also be involved in the provision of data." The scientists plan to distribute the Survey's results on optical discs or CD-ROMs.

Ruth noted that the techniques employed for the Digital Sky Survey may prove to be applicable to high-energy physics. "We are finding that the interaction of the disciplines is an appropriate direction,"

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Digital Sky Survey continued

she said. One example is visualization methods. "We have gained access to astrophysics visualization tools that we already see applications for in high-energy physics," Ruth said. In addition, while the Sky Survey requires databases larger than those currently necessary in Fermilab physics, CDF and DØ will demand the same sorts of databases within five years. "It's good experience for handling high-energy physics data in the future," she said.

The Digital Sky Survey is also allowing the computing professionals involved to broaden their knowledge. Ruth said that the project "is allowing us to be part of the planning process in a way we haven't

been able to in high-energy physics. We get to help specify systems, design systems from scratch, be responsible. We're learning from that."

While the scientists involved in the Digital Sky Survey are fairly confident that they will learn more about recently found phenomena such as cosmic voids, walls and other large-scale features, the most exciting discoveries may be serendipitous. Prior astronomical surveys that have explored uncharted realms have always uncovered novel and unexpected phenomena. Quasars, pulsars (neutron stars) and x-ray binary stars (black holes?) were all discovered in surveys designed for other purposes.

Markley continued

Finley supervised talented minority students from the Target: Science and Engineering program. He summed up his philosophy on working with young people in a 1991 *Ferminews* interview: "If the students have a job that allows them to be challenged, it heightens their interest," Finley said. "It gives them the self-confidence that they need, the 'yes, I can do this.'"

Finley began working with young science students during his stint as head of the Plastics Lab at Argonne National Laboratory, where he worked from 1957-1973. It was there, Finley remembers fondly, that summer students named a laboratory sheep "Finley," because it, like its namesake, walked so quickly. It was also during the Argonne years that Finley began work on the hemodialyzer, or artificial kidney, that brought him six patents. He left Argonne to continue his hemodialyzer development in private industry.

He answered a newspaper advertisement Fermilab had placed in 1979, forgetting that many of his long-time Argonne friends were now at this Laboratory. When Finley's resume crossed the desk of former Deputy Director Philip Livdahl, Phil called Finley's home, where his wife, Joan, answered. "I didn't know Finley was looking for work!" Phil said. "Tell him to come on down here and get to work."

Finley came to the Lab in November of that year, and has spent the last few years in the Materials Development Lab developing and testing epoxy resin plastics and other plastics for use in high-energy physics. He has contributed to the Tevatron, CDF, SSC coils and the Solenoid Detector Collaboration (SDC). "Finley has a unique expertise in his knowledge of organic and inorganic materials," Tom Nicol said. "He's an expert in materials for detectors,

radiation resistant scintillating fibers and magnet insulation systems." Tom added that Finley helped develop CAD systems at the Lab, and was instrumental in the Machine Shop receiving its first numerically controlled machine tool. In addition to his patents on hemodialyzers, Finley has claimed a patent on a plastic foam, a laser resistant endotracheal tube and a cryogenic materials tester.

Retirement will give Finley the opportunity to pursue his many other interests. He and Joan have turned jewelry making, a 20-year-old hobby, into a small business. Their pieces, made of silver, gold and semi-precious stones, can be found in jewelry stores and art shows. Finley will also continue to work with stained glass and cultivate orchids. He was able to incorporate his love of the outdoors into his Fermilab work as chair of the Fermilab Prairie Committee

Probably the most important result of Finley's retirement will be the opportunity to watch one-year-old Chryste Cada, the Markleys' granddaughter, grow up. "I'm planning to spend a lot of time with her," Finley said.

Finley's absence will not go unnoticed. "He'll leave a large gap," said **Jay Hoffman** (TS/Engineering), who worked with Finley at Argonne before rejoining him at this Lab. "I think he's one of the most interesting people I've ever met. His broad experience both in the national laboratories and industry has contributed to him being a good analyst."

Tom Nicol predicts that Fermilab's research programs and summer students haven't seen the last of Finley. "It's clear with people like Finley—he won't stop studying and working on things that have been interesting to him over the years," Tom said. "I'm sure he'll be back in some capacity."

Physicist OK continued

In the morning, Theresa and her companions were lifted by ropes and harnesses to the top of the Continental Divide by the rescue group. The helicopters, donated to assist in the rescue by a local television news station, then took the group down the mountain.

Demarest told Theresa that of all those he has rescued, the trio was in the worst predicament, but in the best physical condition.

Back in Batavia, Theresa has forgotten all the plans she and her two traveling friends made for when they finally got off the mountain. Now her thoughts are on another hiking trip to the Continental Divide. "The next time I am going to do this differently," Theresa said. "And do it right."

Quality corner

The base of every quality program is data collected through visual and mechanical inspection which permits evaluation of product or service status.—Philip B. Crosby

If you have a suggestion on how to improve the quality, efficiency, reliability or effectiveness of a Lab service or operation, send it to Mark Bodnarczuk, MS 200 or Bitnet Bodnarczuk @FNAL.

Material Safety Data Sheets: your key to chemical safety

Living in the modern world, you probably are aware that the use of chemicals offers convenience and progress at home and work. Naturally, you want to avoid dangerous overexposures to chemicals. Such overexposure is possible no matter where you work, even in an office or light industry.

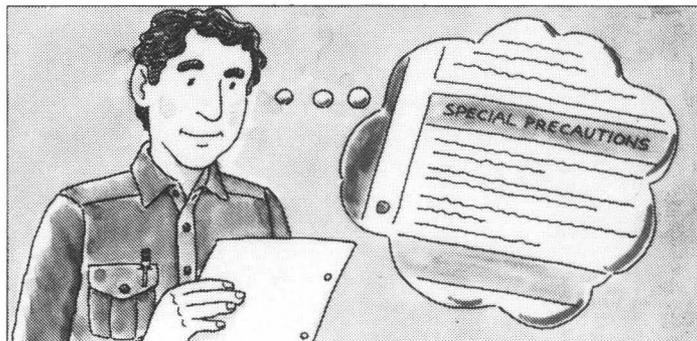
Fermilab's Hazard Communications, or HazCom, program was created to protect your health and safety. Three important elements are at the heart of your HazCom program: warning labels on containers, training on the safe usage and handling of chemicals, and Material Safety Data Sheets.

Know what's on an MSDS

MSDSs are printed pages which give you all the critical information you need about how to use, transport and store chemicals in order to protect yourself, as well as what to do in case of emergencies and overexposure. Required information on MSDSs includes:

- The chemical's name or names
- Name, address and phone number of the manufacturer
- List of the chemical's ingredients
- Permissible Exposure Limits or Threshold Limit Value
- What conditions or other substances will cause the chemical to catch fire, explode, melt or turn into dangerous gases
- How it usually looks and smells
- How to put out a fire involving the chemical
- What to do if it spills or leaks
- How to prevent dangerous exposure
- Health hazards such as skin irritant or cancer-causing
- Symptoms of overexposure
- First aid
- When the MSDS was prepared

The information for each chemical's MSDS is put together by the manufacturer or distributor for that chemical. The sheets often look different from each other, but they still provide the same information. The law requires your employer to keep MSDSs up to date and to send the MSDS to your doctor or designated representative if you request it.



Know where the MSDS is kept

MSDSs must be readily accessible to employees. If you're not sure where to find MSDSs, contact your supervisor. MSDSs are also stored in your Division/Section ES&H Group Office. The ES&H Section (WH7E) maintains a centralized file of MSDSs for all hazardous chemicals on site.

For recently purchased chemicals, it is the responsibility of the Shipping and Receiving Department to attach a copy of the MSDS to the container and forward it to the party who ordered the chemical. A copy of the MSDS is also sent to the Division/Section ES&H Group and the ES&H Section.

If you cannot find a specific MSDS, contact your supervisor. Supervisors should contact their Division/Section ES&H Group.

Outside contractors are required to have MSDSs for hazardous chemicals which they bring on site. They must be made available to ES&H personnel upon request.

Important Protection

You should always read the MSDS *before* you begin a job using a chemical. Even if you've used the chemical before, the manufacturer may have changed its formula which may change the steps you should take to protect yourself. Taking proper precautions listed on the MSDS can prevent serious long-term illnesses.

If you don't understand something on the MSDS, ask your supervisor. HazCom works best if you are fully informed and involved.—Maureen Huey (ES&H) contributed to this article.

SciTech receives DOE grant

Secretary of Energy James D. Watkins has announced that SciTech, a hands-on science center serving the west suburbs of Chicago, is the recipient of a Museum Science Education Award totaling \$113,062. SciTech, in conjunction with Ohio's Center of Science and Industry (COSI) and the University of Michigan, will use the award to develop a project called $E=mc^2$, *A Hands-On Exploration of Einstein's Famous Formula*.

SciTech and Fermilab have a close relationship. **Ernie Malamud**, a senior scientist at the Lab, is spending a three-year sabbatical as director of the Aurora center. "We get a great deal of support from Lab employees," Ernie said, adding that volunteers from the Fermilab community play a crucial role in keeping SciTech at the forefront of science education.

Ernie and University of Michigan professor Greg Snow, a $D\emptyset$ experimenter, were two of the three principal designers for the $E=mc^2$ project. $E=mc^2$ will address Einstein's 'Theory of Relativity' through three exhibits: a permanent exhibit at SciTech, another at COSI, and one that will travel. With developmental and evaluative support from the University of Michigan, the exhibit will demonstrate, in layman's terms, that energy is readily converted to matter, and matter is readily converted to energy. Visitors will manipulate the two real subatomic physics processes and use detectors, similar to those used in basic physics research, to "visualize" these transformations. Graphic panels and other media will relate the exhibit's concepts to modern energy issues.

The Museum Science Education Program, started last year, is sponsored by DOE's Office of University and Science Education, and is aimed at increasing public science literacy. SciTech was one

of only two centers to receive program grants two consecutive years.

In announcing this year's awards, Admiral Watkins stressed the importance of science centers such as SciTech. "These museums, science and technology centers and zoos, through their informal education environment, help to demystify science and technology," he said. "They are teachers and translators that help the public understand science and technology, and appreciate their critical role in supporting the Nation's well-being."

DOE received applications from 41 institutions located in 25 states and the District of Columbia. The awardees and their collaborators represent ten states and propose a variety of projects relating to the fundamental energy sciences. Through this program, millions of Americans will be made aware of and have a sense of excitement about how science and technology affect everyone's daily life. The programs funded by these awards will also encourage children to pursue classes that will prepare them for careers in science, mathematics and technology.

Ernie invites Fermilab employees to help construct the $E=mc^2$ exhibits, which should be ready for display in approximately eighteen months. " $E=mc^2$ is going to be a really fun project to work on," he said. "It's quite a challenge to get (the concept) across, but we have some good ideas."



Fermilab senior scientist Ernie Malamud heads SciTech.

SciTech and Fermilab have a close relationship. Ernie Malamud, a senior scientist at the Lab, is spending a three-year sabbatical as director of the Aurora center. "We get a great deal of support from Lab employees," Ernie said.

SciTech offers half-price tickets

SciTech is offering half-priced admission tickets to Fermilab employees and their families during September.

The hands-on museum has exhibits that demonstrate scientific principles with signs that say "Please touch." SciTech is located in downtown Aurora's Historical District and is open Wednesdays, Fridays and Sundays from noon to 5 p.m., on Thursdays from noon to 8 p.m., and on Saturdays

from 10 a.m. till 5 p.m. Admission fees normally range from \$2 for kids to \$8 for a family, so take advantage of this opportunity to purchase half-price tickets.

Stop by the Activities Office, WH1E and get a discount coupon for yourself or your whole family. You may present it at the SciTech admission desk any convenient time during September and receive the discount.

New from the stockroom

EA 2650-0920 Glasses, safety, non-prescription w/ clear side shields, bouton P/N 116020, black frames, clear lens.

EA 1342-0100 Sign, self-adhesive, white vinyl, bright red ink, red lettering and white background, fire extinguisher, 4" x 18", Brady P/N 85261 or equal.

PR 2250-0425 Boot cover, disposable, elasticized top and ankle, Tyvek uppers, vinyl sole, latex glove P/N 905 or equal 12" high, large.

PG 1320-1330 Plotter pen, disposable, for paper or transparency, fiber-tip pens for HP plotters, HP #17745T, Milicolor, .3mm tip, 5 pens per pkg. Bk, gn, be, yw and rd.

PG 1320-1340 Plotter pen, disposable, for paper or transparency, fiber-tip pens for HP plotters, HP #17845P, Milicolor, .3mm tip, 5 pens per pkg. Bk, gn, be, yw and rd.

PG 1340-0118 Label, self adhesive file folder, 5/8" x 3 7/16" x 9/16". Black border, Avery P/N Ave-FF3-BK.

EA 2250-0580 Coat, laboratory, disposable, Tyvek material w/plastic snap closures, Magid glove P/N C111XXL or equal. Extra extra large.

EA 1258-4360 Tip, solder pencil, Temp. sensing 800° F., Weller style PTA8 1/16" screw driver.

CN 1825-1350 Paint, enamel, fast-drying, 12 oz. Pressurized spray can, wood/metal Seymour Hi-Tech P/N 16-116, flammable, gloss safety yellow, indoor/outdoor.

PG 1320-1330 Plotter pen, disposable, for paper or transparency, fiber-tip pens for HP plotters, HP #17745T, Milicolor, .3mm tip, 5 pens per pg., bk, gn, be, yw & rd.

EA 1268-5005 padlock, keyed, Harden steel chrome-plated shackle, alum. body w/red finish, ID# stamp on keys & padlock body. 1 1/2 in. W, 3 in. H American P/N 1107R.

EA 1315-0357 Toner, cartridge HP LaserJet 111 SI, for Hewlett Packard Personal Laserwriter H.P. P/N 9229 IA.

EA 1780-0730 cabinet, storage, stackable, wooden, for 3.5 in. floppy disks, hold 140 disks, Mac P/N ACC-0400, solid teak-color wood.

CN 1825-1335 paint, enamel, fast-drying, 12 oz. pressurized spray can, wood/metal. Seymour hi-tech P/N 16-122, flammable, gloss

Golf League plans outing

The Fermilab Golf League is pleased to announce that a golf outing will be held at Edgebrook Country Club in Sandwich on Friday, August 14. First tee times begin at 11 a.m.. Cost for greens fees is \$18 per person, optional riding cart is \$9.50 per person. For further information or to reserve your tee time call Don Arnold, x2871, or Al Baumbaugh, x4044. One-half day of approved vacation is required.

Voice your opinions

Do you have something to say? Let your senators and representatives know what you think about today's issues. An up-to-date list of all senators' and representatives' addresses and phone numbers is posted on the bulletin board in the Library (WH 3X). The list is also available electronically by sending e-mail to FNAL::PGARRETT.

August movie schedule

The Fermilab International Film Society presents movies from all over the world. Films begin at 8 p.m. in Ramsey Auditorium. All foreign films have English subtitles. Admission is \$2.

The August movie schedule is as follows:

Friday, August 14: *The Sacrifice*: Exiled filmmaker Andrei Tarkovsky delivers a story of a writer living on a remote Baltic island during the imminent outbreak of World War III. Cinematography by Sven Nykvist. Sweden, 1986 (145 minutes).

Friday, August 28: *Labyrinth of Passion*: Fifty bizarre characters race in and out of a screwball sex comedy set in Madrid during a wildly promiscuous and permissive time. Pedro Almodavar, dir. Spain, 1982 (100 minutes).

Harper's index

Chances that an American does not consider himself or herself a rock-music fan: 2 in 3.

Number of countries that have issued at least one Elvis Presley postage stamp: 13.

Arts Series presents James Cotton Acoustic All Star Trio

"We're talking about the blues, fast and getting down dirty, we're talking about James Cotton, a singer, stomper and harp-player extraordinaire," says the *New York Daily News*. The house will be shaking when the legendary James Cotton visits Ramsey Auditorium on Saturday, August 22 in an acoustic setting with Magic Slim and John Primer.

During the course of his career, Cotton has racked up an impressive series of fifteen critically acclaimed albums, the last two being nominated for Grammys. Cotton has played with the best in his field, including 12 years with Muddy Waters, tours with Johnny Winter and Janis Joplin, and sessions with B.B. King, Howlin' Wolf and Elvis Presley.

Cotton's musical career began in 1944 at the age of nine when he left his home in Tunica, Mississippi with his 15-cent harmonica in search of his harp-playing idol Sonny Boy Williamson. Finding him at the West Helena, Arkansas radio station where Sonny Boy hosted the popular King Biscuit radio show, Cotton posed as an orphan and the legendary harpist took him home to raise as his son. Cotton stayed with Sonny Boy until the age of 15 when he resolved to travel his own road. His first stop was West Memphis, Arkansas where he played harp for four years with another blues great, Howlin' Wolf.

It was his gig with Muddy Waters that gave James Cotton his biggest career break. Cotton reigned supreme in Waters' band for nearly 12 years. His powerful stage presence and aggressive harp playing

contributed to Waters' reputation as well as his own. Cotton recorded with Muddy such classic tunes as "I Got My Mojo Working," "Walking Through the Park" and "You Can't Lose What You Never Had."

When he struck out on his own in 1966, Cotton's reputation was expanding beyond the blues label. He impacted a new generation of musicians such as Paul Butterfield and Peter Wolf of the J. Geils Band. Boz Scaggs, Steve Miller and Bonnie Raitt all list Cotton as a major influence.

Today, Cotton and his band play festivals ranging in size from 600-seat clubs such as the Great American Music Hall in San Francisco to the 100,000 crowd at the Chicago Blues Festival.

Don't miss James Cotton when he appears in a rare acoustic performance at Fermilab on Saturday, August 22 at 8 p.m. Trio subject to change. Tickets cost \$10. 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 and a means of placing ticket orders.



*Don't miss
James Cotton
when he
appears in a rare
acoustic
performance in a
trio setting on
Saturday,
August 22.*

Give it your energy: stop junk mail

The junk mail Americans receive in one day could produce enough energy to heat 250,000 homes.

Background

We don't usually think of junk mail as an environmental hazard—just a nuisance. But if you saved up all the unwanted paper you'll receive in the mail this year, you'd have the equivalent of one-and-a-half trees. And so would each of your neighbors. And that adds up to about 100 million trees every year.

Did you know

- Americans receive almost two million tons of junk mail every year.
- About 44% of the junk mail is never opened or read.
- Nonetheless, the average American still spends 8 full months of his or her life just opening junk mail.
- Junk mail is made possible by U.S. Postal Service

policies that enable bulk mailers to send pre-sorted batches of mail for their minimum rate—\$.10.1 per piece.

- If only 100,000 people stopped their junk mail, we could save about 150,000 trees every year. If a million people did, we could save some 1.5 million trees.

Simple things to do

- Write to: Mail Preference Service, Direct Marketing Association, 6 East 43rd St., New York, NY, 10017. They'll stop your name from being sold to most large mailing list companies. It won't affect the lists of companies that already have your name (you must write to each of them individually to get off their mailing lists), but it'll stop new ones from getting it and reduce your junk mail up to 75%.
- Recycle the junk mail you already get. If it's printed on newsprint, toss it in with the news-

papers. If it's quality paper, make a separate pile for it—many recycling centers accept both white and colored paper. Envelopes are recyclable, too—as long as they don't have plastic windows.

—The Earthworks Group: *50 Simple Things You Can Do to Save the Earth* Berkeley, CA, Earthworks Press, 1989.

FONSI continued

aware of that," said **Dixon Bogert**, deputy project manager and head of the Main Injector Department in the Accelerator Division. "We're not hiding anything," Dixon added. "We do not impact any type of endangered species: plant or animal. We selected the site carefully, so it was the best site for physics as well as for the environment. We set out to demonstrate that, and we did."

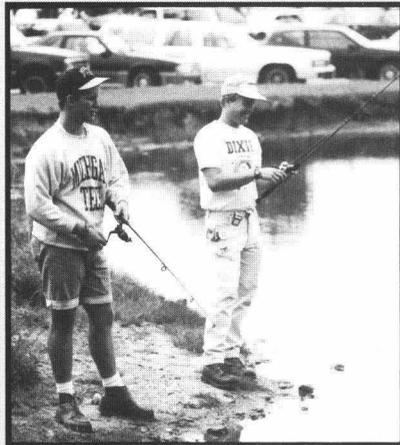
Steve Holmes agreed. "In my view, the preparation of the EA and publication of the FONSI provide a model for the manner in which environmental concerns can be accommodated within the design of a large project by a national laboratory," he said.

DOE published the final FONSI in the *Federal Register* July 16, 1992. Copies of the document and the Environmental Assessment are available from DOE's Batavia Area Office.

"The FONSI is the first step toward a major achievement," Andy Mravca said. "The Lab should be commended for a job well done."

Fermilab has already begun the next step in the achievement. Main Injector construction, in the form of wetlands mitigation work, commenced July 24.

Nalrec news



Daryn Oxe (left) and Jim Finks III show their fishing skills.

Fourteen sportsmen competed in the first **Fermilab Father-Son Fishing Derby** held July 19 on the Lab grounds. **Daryn Oxe** (FESS/Electrical) captured first prize with a carp weighing in at 1 7/8 pounds. Second prize went to **Jim Finks III** (BS/OM/Mechanical), who caught a big mouth bass which weighed 1 3/4 pounds.

August 14 is the **Old Timers' Steak Fry and Family Picnic**, 5 to 10 p.m. This will be Nalrec's big event for the summer. Your Fermilab years determine the price of your steak, baked potato and sweet corn. Hot dogs and chips are available for the younger crowd. Rides, games and "Destiny" will entertain partygoers. Make this a real family event.

Watch for posters advertising the **Branson Music Jamboree**, a five-day, four-night trip offered November 4-8, 11-15 or 18-22. Cost is \$419 double accommodations, \$499 single accommodations for a deluxe motor coach trip to Branson, Missouri. Five meals are included.

Travelers will see four country music shows, including the Baldknobbers Jamboree, Shoji Tabuchi Theater, Roy Clark Theater and Grand Palace Music Theater.

A \$50 deposit is required to hold your spot. Payment is due thirty days before date of departure. For more information, contact Jesse Guerra, x4305.

Classified Ads

Real estate

3-bedroom townhouse in Warrenville, attached garage, southern exposure, central air, all appliances, fireplace. Priced to sell at \$93,500. Rent-to-buy and seller-finance options available. 708-983-0279, x4597 or FNAL::B94786.

Spacious (2200 sq. ft) **2-story Colonial** in Batavia on 1/2-acre lot edged with mature trees. Beautiful park-like view. 4BR, 2.5 BA, large kitchen, 1st floor laundry, full basement, 2.5- or 3-car garage, many extras. Great house and neighborhood for kids. Less than a mile to Fermilab. \$174,400. Call x2121 or 708-406-1687. BO::Phillips.

Lakefront home (year around) for sale by owner. Lake Koshkonong, Wisconsin, 90 minutes from Chicago. 3BR, 2BA, open-air kitchen, dining room, living room with walkout to large deck. Lower level has completely finished large family room with walkout to patio, gas hot water heat, 2.5-car garage, city sewers. Move-in condition. \$193,000. Arlene, x3492 or 708-208-1183.

Miscellaneous

New, **full-size golf bag** with hood and match-

ing fur head covers. Original price, \$120, will sell for \$60. Jim, x4293 or 708-416-0548.

0.45 carat **Marquis cut diamond ring** with accompanying gold ring. Appraised at \$1,600, will sell for \$850 or reasonable offer. Mike, x2479.

Lawn Tractor/Mower Craftsman II, 12hp, 38", 2 years old, with plow and chains. \$950 obo. Call 708-584-4566.

Baldwin Acrosonic piano, great sound, tuned. \$1,500 obo. Call x2714 or 708-513-5102 evenings.

Baldwin practice piano with real piano action, full keyboard and speaker or earphone output, \$250; **oak kitchen table**, good condition \$300 obo. 10' x 13' machine-made **oriental rug** with rose geometrical pattern, good condition \$250, 3 white **French Provincial chests** of drawers, \$30/ea. **Exercise bike**, \$45. Roy, x3144 or 708-665-8246.

Entertainment

2 lawn **tickets for Jimmy Buffet** at Poplar Creek on August 15 at 8 p.m. \$20 each. Call Marsha at x4377.