

Fermi News

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First Light

On a clear dark night in May, light that had traveled through space for a billion years touched a mountaintop in southern New Mexico. At that moment, photons that had left their source when algae were the only life on earth entered the Sloan Digital Sky Survey's 2.5-meter telescope. The telescope's sophisticated instrumentation turned the information the photons had carried across the universe into images of the stars.

First light!

First light for the Sky Survey came on May 9, with the first high-quality images, like this one, on May 27. The bright galaxy, called NGC 6070, lies in the constellation Serpens. It is receding from the Earth with a velocity of about 2,000 kilometers per second and is at a distance of over 100 million light-years. Several other galaxies are also visible. The point-like images are stars in our own Milky Way Galaxy.

Historic New Sky Survey Achieves First Light

by Judy Jackson,
Office of Public Affairs

Scientists of the Sloan Digital Sky Survey, the most ambitious sky-mapping project ever undertaken, announced on June 8 that the project's unique telescope, at Apache Point Observatory in southern New Mexico, has achieved first light. In a presentation at the San Diego meeting of the American Astronomical Society, Constance Rockosi, a University of Chicago graduate student and member of the Sky Survey collaboration, discussed the team's achievement.

"With first light, we have demonstrated that we have the tools in place to make a deep, high-resolution, multicolor, digital map of the sky," Rockosi said. "It is an exciting and important milestone in our project to chart the large-scale structure of the universe."

Years of work by project collaborators, including major contributions from Fermilab scientists and engineers, and recent round-the-clock efforts by a team of scientists and engineers on the mountaintop, culminated in first light on the night of May 9 and the first high-quality images of a large swath of sky in the constellations Serpens and Ophiuchus on the night of May 27.


"When I saw the starry images appear on the monitor, it was suddenly worth the 18 trips I have taken across the Pacific," said astronomer Mamoru Doi, of the University of Tokyo, whose work on the project includes contributions to the system that renders the starry images in brilliant color.

Chicago's Rockosi echoed his excitement at seeing the first images scrolling across a bank of computer monitors.

"It was incredible to see such a large piece of the sky presented in such depth and fine detail—really a beautiful sight," she said.

Several elements of forefront astronomical technology came together in the new telescope to yield the first celestial images. Chicago's Rockosi is part of a team, headed by Princeton University astronomer Jim Gunn, that designed, built and installed the telescope's digital camera, the most complex imaging instrument ever developed for astronomy. It uses a large array of silicon charge-coupled devices to create five-color digital images of the sky.

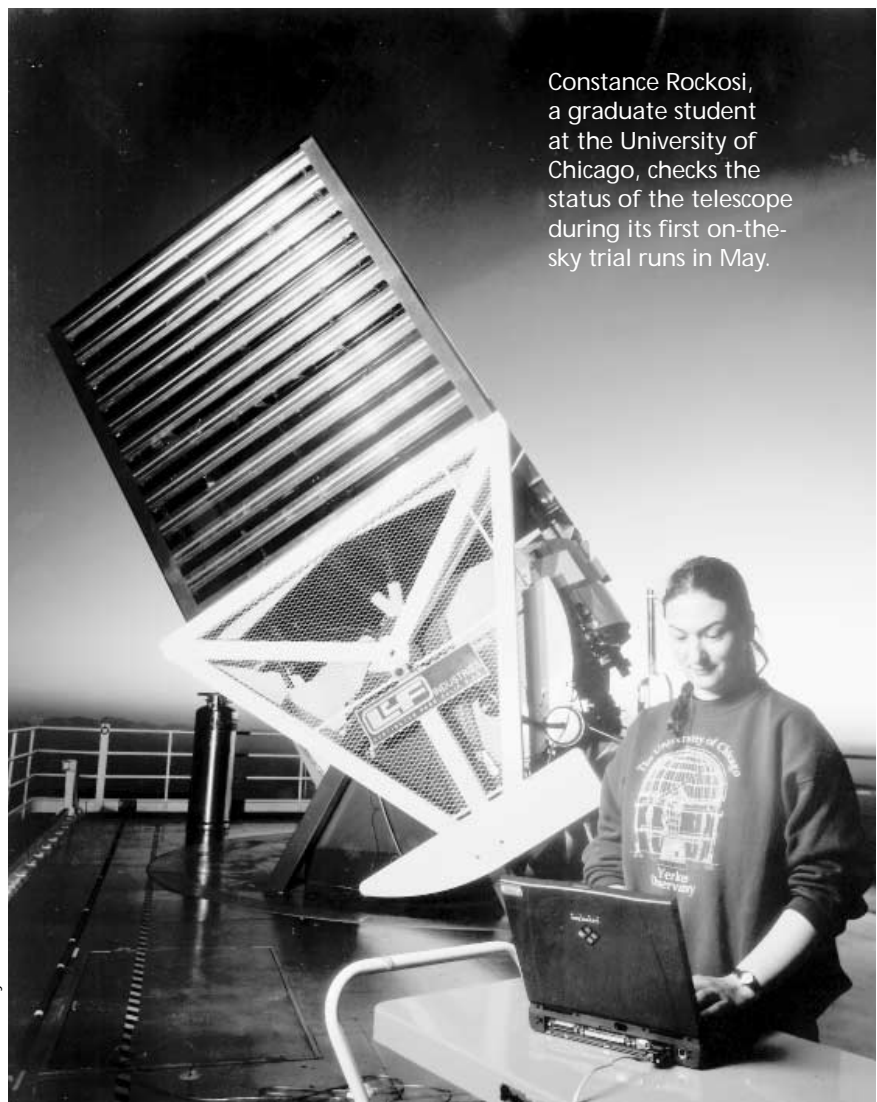
"The camera has come together in concept and in metal, glass and silicon over the past



A small section of the image obtained by the Sloan Digital Sky Survey on the night of May 27. The overall image is 5,000 times larger than this small piece of the constellation Serpens.

**"With first light,
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~ Constance Rockosi,
graduate student at the
University of Chicago



Constance Rockosi, a graduate student at the University of Chicago, checks the status of the telescope during its first on-the-sky trial runs in May.

Photo by Reidar Hahn

many years," Gunn said, "and has, of course, been thoroughly tested in the laboratory. So we did not really doubt that it would work on the sky. But the thrill of seeing real images and knowing that the Survey was truly going to work after so many years of the sweat and tears of so many people was quite incredible."

Fermilab staff played important supporting roles in preparing for first light. Fermilab engineers designed and implemented the controls systems and interlocks that allow the telescope to move freely without damaging its sophisticated instruments and systems. Fermilab technicians Angie Prosapio and Steve Bastian took up residence at Apache Point to provide electrical and mechanical support wherever it was needed. And engineer Paul Czarapata, Beams Division associate head, redesigned the telescope's wind baffle control system. Unlike many other telescopes, the Sky Survey's is not enclosed in a dome. During observing, the baffle follows the telescope as it moves, to protect it from buffeting by the wind.

After several months of commissioning, Survey operations will begin. The collaboration's astronomers will use the images and spectra to construct the most comprehensive three-dimensional model of the cosmos ever attempted. Five years of data-taking by the Survey will produce a catalog of the positions and brightnesses of more than 100 million stars, galaxies and quasars, according to University of Washington astrophysicist Bruce Margon.

"The Sloan Digital Sky Survey will be significantly more sensitive than our current comprehensive guide to the heavens, the 40-year-old Palomar Sky Survey," Margon said. "The Palomar survey used photographic plates to produce two-color, two-dimensional images. Our survey will use digital technology and spectroscopy to produce five-color images in three dimensions. It will map one quarter of the sky and give us a three-dimensional picture of the universe through a volume a hundred times greater than anyone has explored before."

Scientists will use the new map to explore critical questions about the nature and evolution of the universe.

"The Sky Survey will greatly advance our knowledge of the universe—past, present and future," said Fermilab/University of Chicago astrophysicist Michael Turner. "We are struggling to understand how the wondrous panoply of structure we see in the universe today—galaxies, clusters of galaxies, voids and great walls of galaxies—arose. Our best explanations involve what happened in the first instants after the Big Bang and relate to the unification of the fundamental forces of nature. So the Sky Survey may give us not only a clearer

picture of outer space but also of the inner space at the heart of matter."

Ultimately, the Sky Survey will make its historic celestial catalog available to astronomers around the world, for a wide range of future studies. The catalog's unprecedented volume of data creates challenges for the scientists who will use it.

"The techniques that astronomers use today do not scale to this survey, whose information content will rival the Library of Congress," said Johns Hopkins astronomer Alex Szalay, who is designing data-analysis systems for the project. "The Sky Survey requires a novel computing and analysis environment. In fact, the Sky Survey approach is creating new standards in data analysis for astronomy that may well apply to other fields, such as high-energy physics."

Data from the mountaintop will be transferred daily to computer systems at Fermilab. Software systems called data pipelines will translate the raw data into images of the sky.

Eventually, the Sky Survey's data will be available to the public over the Internet. Professional and amateur astronomers, teachers and budding school-age astronomers anywhere in the world will be able to dial up an image of a selected piece of the sky in five colors.

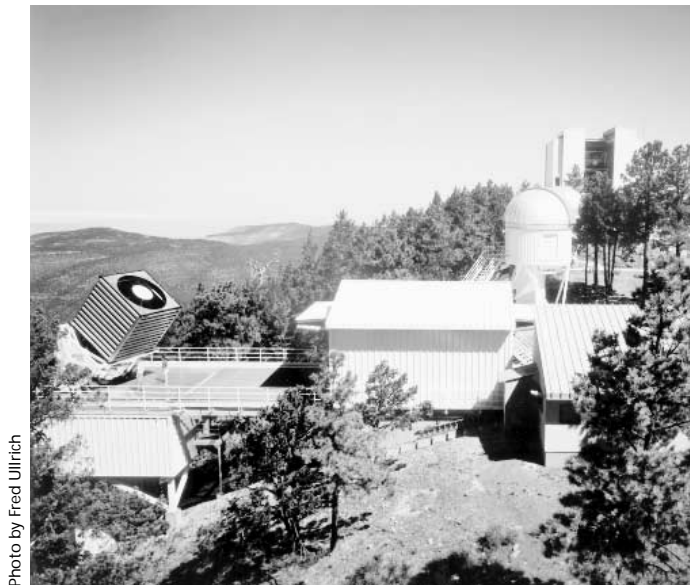
The Sky Survey collaboration includes scientists from The University of Chicago, Fermilab, the Institute for Advanced Study, the Japan Participation Group, The Johns Hopkins University, Princeton University, the United States Naval Observatory and the University of Washington.

Fermilab Director John Peoples, the chairman of the Sky Survey's management committee, cited the Department of Energy's support for the Sky Survey.

"DOE is a longtime stronghold of high-energy physics research," Peoples said. "Fermilab's collaboration in the Sky Survey reflects the increasing convergence of particle physics and cosmology." ■

For information on the Sloan Digital Sky Survey, see: <http://www.sdss.org>.

Next issue: Fermilab's special role in the Sloan Digital Sky Survey



Apache Point Observatory in the Sacramento Mountains of New Mexico. The Sloan Digital Sky Survey's telescope is at the left. The monitor telescope, used for calibrations, is inside the small dome to the right of center. Optical fibers for spectroscopy are prepositioned each day in the building on the right. The center building rolls on rails to cover the 2.5 meter telescope when it is not in use.



Image by Bruce Kerr

A computerized representation of a Tevatron collision, which will not poke a hole in the universe.

The Universe Lives On

And rumors of its imminent demise have been greatly exaggerated.

by Mike Perricone, Office of Public Affairs

Poor old Earth, and indeed our whole cosmic neighborhood, has been under attack from talk shows, tabloids and Hollywood.

Despite threats ranging from cosmic objects to subatomic particles, our beleaguered universe hasn't blown its stack. Nor is it likely to, despite recent warnings on a late-night radio talk show that turning on the Tevatron for Run II would "blow the universe to smithereens."

In a scenario described on the Art Bell show by University of Hawaii psychologist Paul Dixon, the energy

released by proton-antiproton collisions in the Tevatron would "tear a hole in the universe," pushing it into a phase transition, opening up a super vacuum where the laws of physics are different, and promulgating an energy bubble that would propagate at the speed of light—meaning the end of the universe as we know it. Dixon also invoked the specter of a homemade supernova cooked up in the Tevatron.

However, Dixon's doomsday predictions haven't a scientific leg to stand on.

"We don't have to worry about it happening," said Fermilab and University of Chicago cosmologist Michael Turner. "Mother Nature has already done the experiment."

Every second, Mother Nature sends 100 million cosmic-ray particles raining down on Earth, creating particle collisions with energies surpassing those of Tevatron collisions. What happens? Nothing. No holes in the universe. No backyard supernova.

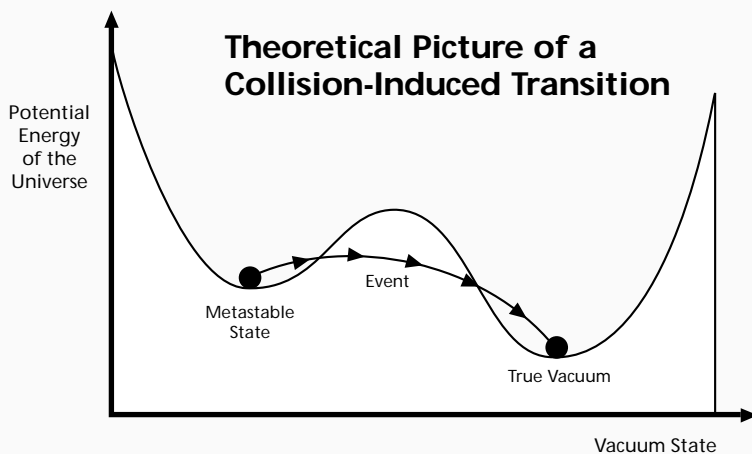
"If we see a supernova, that means that the supernova's energy has reached us," said Fermilab cosmologist Rocky Kolb. "But in a phase transition, that energy in the shock front would never dissipate. The shock 100 billion light-years away would be just as powerful as if you were standing next to it."

So if a supernova had set off a phase transition, we wouldn't see the supernova because the shock would have blown us away when it reached us.

Dixon, who is a psychologist, has espoused the phase transition theory for years. He picketed Fermilab in 1995, describing it as the "home of the next supernova."

The supernova scenario also appeared recently in the tabloid, *Weekly World News*, attributed to Hans Estienne, who claims affiliation with the University of Bonn's Department of Applied Physics—apparently without basis.

"Neither in the Physikalisches Institut nor in any other physics institute of the University of Bonn is a Hans Estienne employed," Erwin Hilger, professor of physics, Physikalisches Institut der Universitaet Bonn, replied by e-mail to a query on Estienne.



We live in the universe in the metastable state. In this theoretical picture, an event occurs that kicks a region of space into the true vacuum state. It is energetically favorable for this newly created region to act as a seed and expand into the true vacuum state, since the latter has a lower energy.

Science and Journalism:

Worlds apart? Why does bad science often get good publicity?

by Mike Perricone,
Office of Public Affairs

Sounding like a scientist is much easier than being a scientist.

"If you know a lot of scientific terms and, in a sense, 'speak the language,' you can be very convincing to a lay audience," said Dave Finley, former head of Fermilab's Beams Division.

In addition, complex work isn't easily translated into sound bites or brief newspaper stories, as explained in a recent National Public Radio report.

"...Science is for the ages and journalism is for the moment," *Los Angeles Times* science writer Robert Lee Hotz told NPR. "The scientists are looking for that inclusive truth that will withstand all assaults for all time. We are just trying to get it right for the next 10 minutes."

NPR cited a 1997 report by the Media Studies Center of the Freedom Forum titled "Worlds Apart: How the Distance Between Science and Journalism Threatens America's Future." Reporters who were polled said scientists' jargon makes communicating their work to the public all but impossible. Scientists said few in the media understand the nature of science.

Another problem: unlike political opinions, scientific opinions don't necessarily carry equal weight.

"When a journalist using the traditional political model says, 'well, here's one side but here's the other side,' the journalist gives a lot of credence to what may be not only a minority view, but a trivial view, and makes it seem as if there are two equal sides in the argument," Cornell University science historian Bruce Lewinstein told NPR. "You don't have room to quote all of the people saying 'that guy's a nut.' You quote one person saying 'that guy's a nut,' but meanwhile you also quote the nut and it looks like there's a sort of 50-50 chance." ■



Photo by Reidar Hahn

Paul Dixon (center), of the University of Hawaii, and supporters picket Fermilab in 1995. Despite the banner, there is no scientific basis to Dixon's claim that the Tevatron would create conditions making the Lab the "Home of the Next Super Nova."

Estienne cites Sir Martin Rees as an authority who believes that a jolt of energy from a particle accelerator would be the catalyst for the cataclysm. However, Rees himself says it isn't so.

Rees, the British Astronomer Royal, published a paper with Piet Hut, of the Institute for Advanced Study, for the science journal *Nature* (vol. 302, April 7, 1983) proposing: "It is possible that the vacuum state we live in is not the absolute lowest one."

Hut and Rees hypothesized that supercooling in the universe could have created the level of "false" vacuum in the universe we experience, separated by an energy barrier from a "true" vacuum. They further hypothesized that if a large enough bubble of "true" vacuum formed in our universe, it would expand at close to the speed of light and boil us all into a state of "true" vacuum.

But, they observed, leaking or "tunneling" between the vacuum states is unlikely, because it hasn't happened in the universe in 10^{10} years of high-energy cosmic-ray collisions. Then they asked, with characteristic understatement, whether a new generation of particle accelerators "might trigger such an unfortunate event."

They concluded (emphasis added):

"We show here that this chance, fortunately, is *completely negligible* since the region inside our past light cone has already survived some 10^5 cosmic-ray

collisions at centre-of-mass energies of 10^{11} GeV (billion electron volts) and higher.... We can be confident that no particle accelerator in the foreseeable future will pose any threat to our vacuum."

Even if the Tevatron in Run II achieves an energy of 2 TeV (two trillion electron volts), that would be the equivalent of 2×10^3 GeV, or about a hundred-millionth ($1/100,000,000$) of the minimum energy level Rees sets for major cosmic collisions that have already occurred without arranging an Armageddon.

Cosmic rays at Tevatron levels and higher have been striking the earth 100 million times per second for four billion years. That means—

10^8 collisions/second at
 3×10^7 seconds/year for
 4×10^9 years = 12×10^{24}

or 1.2×10^{25} collisions at Tevatron levels over the lifetime of Earth.

The Tevatron will produce 10^6 collisions per second, so if it operated every second for the next four billion years, it would produce about one percent of the cosmic-ray collisions that Earth has already absorbed at that level without a cataclysm.

"If it hasn't happened yet," said Kolb, "I don't think I'm going to worry about it." ■

US/CMS Project Marks a Major Milestone

Lehman review gives the go-ahead for construction of CERN detector.

by Mike Perricone, Office of Public Affairs

A team of U.S. physicists firmly staked its claim on the next-millennium frontier of high-energy physics on Friday, May 22, 1998, at 11:45 AM in the 1 West conference room of Wilson Hall, when reviewer Dennis Theriot announced: "Congratulations. You have your project."

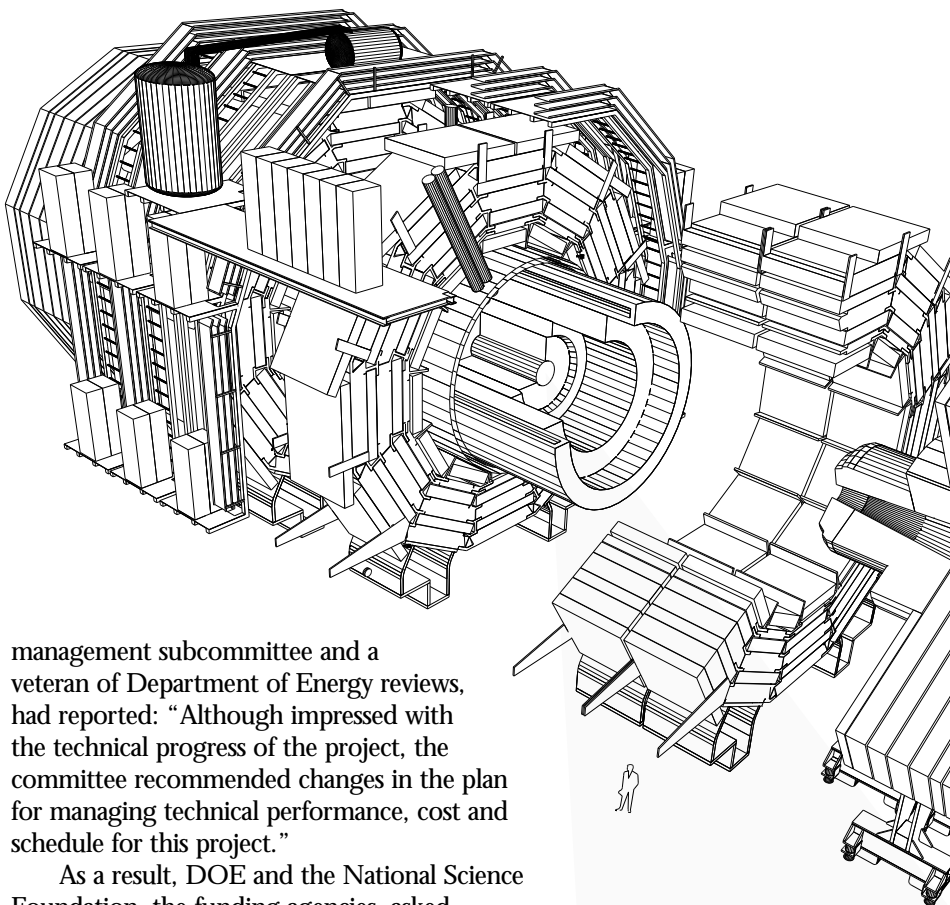
Theriot's words climaxed a successful four-day baseline "Lehman" review of the \$167.25-million US/CMS Detector Project, for which Fermilab has been charged with oversight of the U.S. contribution to building the Compact Muon Solenoid detector for the Large Hadron Collider at CERN, the European Laboratory for Particle Physics in Geneva, Switzerland.

CMS is one of the two detectors that will monitor particle collisions when the 27-kilometer LHC begins operation at CERN about 2005, succeeding the Tevatron as the world's highest-energy particle accelerator. When the first collision is recorded at CMS, CERN's success will be a U.S. success as well.

"We already have facilities in place with large investments from the U.S. government," said Fermilab Deputy Director Ken Stanfield, chair of the US/CMS Management Group. "Fabricating CMS deliverables has been a high priority. Fermilab is experienced in the management of a hadron collider, and this project is a natural extension of the physics of the Tevatron."

"You have to be on the cutting edge, to train students in technology and physics analysis," said Dan Green, US/CMS technical director. "This positions us to make a credible bid for such a device in the future, and to train the people who will drive that project."

The outlook for the US/CMS project's scope, cost and schedule is excellent, the reviewers said. In contrast, at an earlier review in August 1997, Theriot, chair of the CMS



management subcommittee and a veteran of Department of Energy reviews, had reported: "Although impressed with the technical progress of the project, the committee recommended changes in the plan for managing technical performance, cost and schedule for this project."

As a result, DOE and the National Science Foundation, the funding agencies, asked Fermilab to assume project management responsibility for the US/CMS project. Fermilab Director John Peoples delegated the responsibility for the project to Stanfield. The U.S. collaboration, 327 scientists from 38 institutions, will build major components of the detector, including the hadron calorimeter, the endcap muon chambers and the trigger and data acquisition system.

As Stanfield pointed out in his opening statement to reviewers, Fermilab has played three roles: the role of collaborating institution, performing its designated tasks; the role of host lab, offering facilities and support to other collaborators; and the role of management oversight, with responsibility for maintaining the project's schedule and its costs, under a strict funding cap imposed by Congress.

"We could do either or both of the first two without doing the third," Stanfield said. "But we're doing all three. And we take that responsibility seriously."

Just how seriously shone through repeatedly in the three days of presentations that produced the reviewers' go-ahead.

"The effectiveness of the new management was elegantly demonstrated at this review," Theriot said.

Theriot judged the project as one of 27 reviewers drawn from DOE, from other national labs and from universities across the country. John O'Fallon, of DOE, and Patricia



CMS is built around a long superconducting solenoid with a free inner diameter of 5.9m and a uniform magnet field of 4T. The magnet flux is returned via a 1.5m thick saturated iron yolk instrumented with muon chambers.

Rankin, of NSF, participated as observers. US/CMS receives \$147.05 million from DOE and \$20.20 million from NSF, and answers to a Joint Oversight Group from DOE and NSF. This time, everyone was happy.

“What a difference a year makes,” said O’Fallon.

Dan Lehman, who lends his name to the intense review process, concurred.

“You’ve done very well,” he told the CMS managers. “Congratulations.”

Over the last year, US/CMS has been “de-scoped” to bring its costs and scheduling in line with its funding. The new management team faced a major challenge in establishing a realistic contingency level for costs, leaving enough margin to accommodate problems while maintaining the strict budget cap. Green said the project’s contingencies were now consistent with general experience in high-energy physics: 43 percent for the whole project, and 49 percent for the detector system.

Like anyone trying to maintain quality of life on a fixed income, the project had to reduce costs without sacrificing science—its reason for being.

The solution was to “soften the profile,” as US/CMS Project Manager Ed Temple described it, to maximize the effectiveness of the available funds.

The result: the base cost of the project was reduced by 17 percent, allowing available funds to cover both development and contingency.

The new contingency level, Temple said, was determined by a formula of “contingency equals design maturity times a judgment factor.” The judgment factor was assigned a numerical value between 1.0 and 1.4, according to assessments of the technical and schedule risks involved, manufacturing difficulties, possible omissions, and currency fluctuations.

Cost were re-estimated from the bottom up; the results were reviewed; and US/CMS presented the new plan to the international CMS collaboration.

“This is where the magic occurred,” Temple said. “And if, down the road, the project is performing very well, we may go through descopeing in reverse and recover some scope.”

The revised cost estimates reflected a major savings in purchasing copper for the hadron calorimeter, coming in at \$7.7 million instead of the original \$9.3 million estimate.

In descopeing, the project eliminated redundancies in alignment and calibration in several areas without compromising the physics of the detector. Trigger and data acquisition costs were reduced by moving some of the electronics outside the calorimeter, and by reducing the bandwidth from 100 kHz to 75 kHz. The bandwidth change will not affect the trigger’s efficiency for high-mass physics, which will be LHC’s focus, collaborators said.

Still ahead are meetings and more meetings. Theriot suggested a steering committee within US/CMS to address problems; urged the completion of the Memoranda of Understanding with all the participating institutions; stressed that the project needed a major procurement plan involving all the business offices at all the institutions, and directed the project to clarify its reporting procedures to the funding institutions.

“This is not a MacArthur grant,” he concluded. “You’re not given the money with no strings attached.”

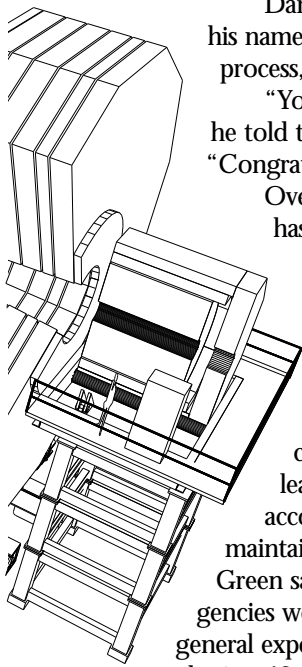
But while Theriot was mindful of the strings, Stanfield confirmed the impression that the project could breathe more freely now.

“We’re pleased, elated and relieved that this review process has gone as well as it has,” he said. “Now let’s get to it and get this project done.” ■

For more information on CMS, see: <http://cmsinfo.cern.ch/Welcome.htm>.

**“Congratulations.
You have your
project.”**

– Dennis Theriot,
CMS reviewer



Reviewer Dan Lehman, of DOE, congratulated CMS managers at the closeout.



The closeout session drew a large audience to the 1 West conference room in Wilson Hall.

Photos by Reidar Hahn

Pioneer Cemetery

by John Scifers,
Office of Public Affairs

Tucked away in a quiet corner of Fermilab's high-energy world lies a 2,500-square-foot parcel of land known as "Pioneer Cemetery." Wind whispers through the evergreens, lending the fenced, neatly trimmed area a sense of protected serenity.

But the condition of the cemetery's 18 grave markers reveals its former neglect.

Broken pieces of the stones peak through the grass. Over 150 years of wind, snow,

mud and hail have rendered the inscriptions on nearly half of the surviving sandstone markers illegible. Worn by time and overgrown by nature, the cemetery might have disappeared, if not for the efforts of one Batavia man.

Batavia's retired postmaster, Augie Mier, discovered an abandoned cemetery—and saved it from ruin.

A soldier's grave

Former Batavia postmaster Augie Mier, who donated an extensive collection of American Indian artifacts to Fermilab, stumbled across the cemetery while rabbit hunting in 1907. Obscured by a prickly tangle of raspberry bushes, the abandoned plot appeared to contain about 40 headstones. The young man took particular interest in one marked "General Thompson Mead...Died March 3, 1851. Aged 77 years."

Thompson Mead, the son of a revolutionary soldier, served the New York state militia as a lieutenant colonel in the War of 1812. When his regiment, outnumbered by over 1,000 Indians and British troops, faced surrender in the Battle of Queenstown Heights, Mead hid his sword on a rock-strewn bluff to keep it from enemy hands. Ironically, the terms of surrender would have allowed him to keep the weapon. When accused of disarming himself out of fear, Mead offered to prove his courage against any willing to challenge it.

Pioneer Cemetery, located west of the Meson lab.



Fermilab Photo



Augie Mier in 1978, the year he donated his collection of Indian artifacts to Fermilab.

Some time later, after being named “General” in the state militia, he began a career as county sheriff.

After retiring as sheriff and spending time in state politics, Mead moved from his native New York to Batavia. There, he joined his son’s family and established a 29-acre homestead in 1845. Following a common practice, the Meads used a previously established cemetery in their pasture as the family’s burial ground.

While the earliest recorded burial there occurred in 1839, all seven of the cemetery’s headstones that display dates reveal deaths between 1848 and 1851, most likely from a cholera epidemic. Many occurred in youth. Agnes Mead, the general’s granddaughter, died at the age of seven months and 17 days in 1848. Henrietta, her sister, followed only three years later. A poem on the two-year-old’s headstone describes the tragedy: “She woke the cup of life to sip / Too bitter ‘twas to drain / She merely touched it to her lips / And then she slept again.”

No longer abandoned

Pioneer Cemetery was formerly called “Blackhawk War Cemetery” because of a mistaken belief that General Mead fought in an 1830s Illinois war against the Sac and Fox Indians led by Chief Black Hawk. Historical evidence indicates that Mead was still in New York at the time, however. Another stray piece of local lore holds that Mead received the land from the government as a reward for his wartime services. But records provided by Fermilab Archivist Adrienne Kolb show that he purchased the land at a cost of \$321.97 from a private seller.

Inaccuracies about Pioneer Cemetery abound, but one certainty remains: if not for Mier’s discovery and his later efforts, the place might have fallen into ruin. His discovery of Mead’s grave in 1907 prompted the patriotic young man to begin placing a flag there every Memorial Day. While he served overseas in World War I, neighborhood children continued the practice.

Mier and Ernest Lundine, another Batavia man interested in the abandoned cemetery, began a campaign to raise interest in Pioneer

Cemetery. After 20 years of knocking on the wrong doors, in 1954 they persuaded the Warrenville American Legion to establish an annual custom of decorating the general’s grave. In 1958, with the permission of Mrs. H. A. Phillips, owner of the surrounding farm, they engaged the help of the Kane County Veterans of Foreign Wars to clear the area and unearth fallen grave stones. Giving the general’s grave the same recognition as other U.S. soldiers’, they later installed a bronze plaque to honor him. Then, in 1972, with the cooperation of Fermilab, they rededicated the cemetery in a ceremony complete with official speakers, a drum and bugle corps, and the raising of a flag that had flown over the White House.

Preserving a piece of history

Ninety-one years ago, when Mier discovered the abandoned cemetery, he counted about 40 headstones crowding its bramble-choked thicket. Speculation puts the original number closer to 50 on a plot of land that once covered nearly a full acre. Sadly, nature and time don’t fully account for its diminished size. Located on what used to be farm land, many of the cemetery’s headstones have been knocked down or broken over the years by farm animals. Others were apparently removed by local farmers for use as stepping stones or other building materials. Now, a number of unmarked graves may even exist under the old Batavia Road and other areas outside the cemetery’s boundaries.

People have suggested replacing the headstones with new, more durable markers and preserving the originals in a historical display, like the one devoted to Indian artifacts in Wilson Hall. However, according to Dave Gassman, Fermilab’s chief legal counsel, state law restricts Fermilab to performing only basic maintenance, such as mowing the grass. Although the land itself is federal property, exceptions stated in the original transfer of the property from Illinois place artifacts there under the interests of the state and possible descendants of the deceased. To restore the cemetery, Fermilab would first have to obtain a permit from the State Historic Preservation Society, the cemetery’s trustee.

For now, according to Roads and Grounds Manager Bob Hall, the only plan in motion calls for basic upkeep, such as repairing the fence and propping up some of the markers. DOE has said that as long as it owns the Laboratory, it will care for the grounds and maintain the integrity of the site. While reaching toward the particle physics of the future, then, Fermilab holds onto this valuable relic of the past. ■



Photo by Jenny Mullins

Augie Mier’s discovery of General Thompson Mead’s gravestone led to restoration efforts and the cemetery’s rededication here is the general’s marker and the bronze plaque placed there by the VFW.



Photo by Jenny Mullins

The grave markers at Pioneer Cemetery give poignant testimony to the difficulty of living in the 1800s. This broken stone, marking the grave of young Agnes Mead, once read, “This lovely bud so young and fair / Called hence by early doom / Just came to show how fair a flower / In paradise would bloom.”

Obey Those Traffic Rules

No more Hollywood stops; no more drag racing. Fermilab is cracking down.

When physicist Gianluca Sabbi first came to work at Fermilab, he'd sail right through the stop signs pitched along Batavia Road. In his native Italy, he once explained, a stop sign is just a suggestion.

But not at Fermilab, at least not anymore. Fermilab is issuing strict new penalties to make sure that its traffic tickets mean something. The reason: driving on the Fermilab campus can be hazardous to your health. In 1997 there were 67 accidents. So far this year there have been 29 accidents, two with injuries.

Because Fermilab's roads are not considered "public roads" under state law, state and local law enforcement officials have no authority to issue traffic citations here (unless there is a case of drunk driving). However, three years ago Fermilab adopted the State of Illinois Vehicle Code. Drivers on Fermilab property—whether they are employees, users, visiting scientists or guests—

must obey the same standards that motorists are legally obligated to observe when driving on Illinois's public roadways.

In coming days, you may see more scenes like this on Fermilab's roads.



Photo by Reidar Hahn

Drivers and bicyclists must abide by the traffic safety rules laid out in the state vehicle code, as well as in the publication *Rules of the Road*. The maximum speed limit anywhere on the site is 40 miles per hour, in parking lots 15 miles per hour. Motorists have to remain on designated roadways unless otherwise authorized, and may park only in authorized parking spaces or in safe, graveled, roadside locations that do not impede the flow of traffic or endanger pedestrians. Parking spaces reserved for the handicapped must be respected. Time limits apply to certain locations, like the horseshoe in front of Wilson Hall. All accidents must be reported to the Security Department at Fermilab.

Security officers will enforce the parking and traffic rules by issuing tickets, and division and section heads will be responsible for enforcing what are described as "progressive" disciplinary measures.

For moving violations (e.g., speeding, failure to yield the right-of-way to pedestrians), disciplinary action is tied to the number of citations the offender receives in a 180-day period:

- **one citation:** the citation is equivalent to a verbal warning;
- **two citations:** a written warning is given and sent to Human Resources;
- **three citations:** a final written warning is given; exempt employees will be required to take two vacation days; non-exempt employees must take two vacation days or two days of leave without pay (the days are chosen by the supervisor); and
- **four citations:** the employee is subject to severe disciplinary action, "up to and including termination for failure to follow Fermilab rules and regulations."

Disciplinary actions for parking violations follow a similar hierarchy for citations, up to five, within a 90-day period. For more details, refer to the Fermilab Environmental, Safety and Health Section manual, chapter 9010, available June 29.

Meanwhile, Sabbi won't have to worry. He has figured out that in Batavia, at least, a stop sign does mean stop. What speed limit signs mean, though, may be another matter. ■

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 June 24

Southwestern Style
Cornish Hens
with Pineapple Salsa
Spanish Rice
Coconut Cake
with Caramel Rum Sauce

Dinner Thursday June 25

Tex-Mex Stuffed Peppers
Filet of Beef
with Balsamic Mint Sauce
Roasted Garlic Potatoes
Vegetable of the Season
Marzipan Cake
with Chocolate Sauce

Lunch Wednesday July 1

Closed

Dinner Thursday July 2

Closed

Excerpt From President Clinton's Commencement Address at MIT, June 5, 1998

"Growth is a prerequisite for opportunity and scientific research is a basic prerequisite for growth. Just yesterday in Japan, physicists announced a discovery that tiny neutrinos have mass.

"Now that may not mean much to most Americans, but it may change our most fundamental theories from the nature of the smallest of atomic particles to how the universe itself works and indeed how it expands. This discovery was made in Japan, yes, but it had the support of the investment of the U.S. Department of Energy.

"This discovery calls into question the decision made in Washington a couple of years ago to disband the superconducting super collider. And it reaffirms the importance of the work done at the Fermi National Accelerator Facility (sic) in Illinois.

"The larger issue is that these kinds of findings have implications that are not limited to the laboratory. They affect the whole of society. Not only our economy, but our very view of life, our understanding of our relations with others and our place in time." ■

CALENDAR

JUNE 22

There is no potluck Supper at Kuhn (Village) Barn this month. The next one is July 10. Questions? Call Angela Jöstlein (630) 355-8279.

JUNE 26

Golf outing at Villa Olivia Country Club. Tee-off times will start at 1:30 pm and a 1/2 day of approved Vacation is required to participate. Format will be 'Best Ball Scramble', so your team will use a combined handicap to determine prizes. Register soon to get an early Tee time! Cost is \$35 for Golf and contests. Carts optional. For registration or more details contact Patrick Liston, x2332 or John Nadjzion, x2820 or Pg# 0988.

Fermilab International Film Society presents: *Shanghai Triad (Yao a yao dao waipo qiao)* Dir: Yimou Zhang, China (1995). Film begins at 8 p.m., Ramsey Auditorium, Wilson Hall. Admission \$4. (630) 840-8000.

JUNE 27

Fermilab Art Series presents: *Tommy Makem with John Forster*, \$16. Performance begins at 8 p.m., Ramsey Auditorium, Wilson Hall. For reservations or more information, call (630) 840-ARTS.

JULY 13 & 14

Fermilab Annual Users Meeting.

JULY 16 & 17

The GSA annual graduate student conference, New Perspectives, from 9 a.m. - 3 p.m. There will also be a poster session following the Users Meeting on the 14th (Tuesday).

ONGOING

NALWO coffee mornings, Thursdays, 10 a.m. in the Users' Center, call Selitha Raja, (630) 305-7769. In the Village 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.

Web site for Fermilab events:
<http://www.fnal.gov/faw/events.html>

MILESTONES

BORN

■ [REDACTED] Vladimir Shiltsev (BD/AARD) and Natalia Maltseva & [REDACTED]

■ [REDACTED] Jeff (FESS/Eng) and Carrie [REDACTED]

■ [REDACTED] John Scifers (Public Affairs) and Debra [REDACTED]

RETIRING

■ Raymond Gunderman, I.D. #1308, on June 18, from FESS/OP Electrical Department.

■ Thomas Schmitz, I.D. #359, on June 19, from BD/AS Mechanical Support Department.

CLASSIFIEDS

FOR SALE

■ '94 SE Mercury Cougar XR7 loaded, only 50K miles, 4.6L V8 engine, antilock brakes, traction control, dual airbags, power brakes (new), steering mirrors, locks, windows, antenna, & driver's seat. Prem. sound sys., cruise, a/c, rear defroster, keyless & lighted entry, remote trunk release, 2-tone factory paint, leather steering wheel, alum. wheels, 1 yr old tires. 7/70 ext. factory warrantee, asking \$11,750. Call Lauri, x2214 or (630) 406-6941.

■ '93 Jeep Cherokee Country 4x4, 74k miles, auto, 190hp I6 engine, power brakes/windows/locks, a/c, + more. Navy blue, all records, \$10,750 obo. Endre, x3912 or endre@fnal.gov.

■ '91 Saturn SL2, 4 dr. auto, a/c, abs, cd, tilt, cruise, 1 owner, well maintained, new brakes, tires, battery, alternator, 89K miles. \$5,900; Darren x3530, (630) 778-6957, darrenq@fnal.gov.

■ '89 Honda Accord LXI, 110K miles, \$3,000. Call Alma, x3452 or (630) 879-3809 evenings.

■ Golf clubs. Titlist DCI Irons, 2 through SW, regular flex, steel shafts, \$250. Cobra Medal Woods, titanium driver, 3 & 5 woods, regular flex, graphite shafts, \$250 for set or will sell separately. All in excellent condition. Jim x4293 or (630) 585-0907.

■ RAM FX2 Irons 3-PW, steel R flex, used 1 season \$280; Oddessey Rossi 1 mallet style putter, like new \$45; Taylor Made Tour Burner metal woods. 1,3,5, R flex graphite shafts \$40. ea; Golfsmith Irons 3-SW, Tour Cavity w/ Alloy R flex shafts, \$150; Golfsmith 260 Titanium driver, pure titanium head w/ Grafalloy Pro-lite 35, R flex shaft, like new, \$125; RAM 56 degree sand-wedge, \$30; Bicycle, Fuji Allegra 12 spd road bike, very low miles, \$125; Exercise bike, DP air resistance w/upper body workout handles, exc. cond., \$75; HP48SX expandable sci-calculator w/PIM card & Macintosh computer interface, \$75. Call Steve, x4253.

■ Nordic Track exercise ski machine, hardly ever used \$400 obo; Ski's - Atomic Arc 195, Salomon 547 Sport Bindings, size 12 US or 13 EU Trappeur 2000 boots also have poles, ski & boot bag, best offer. Call Terry x4572 or e-mail skweres@fnal.gov.

■ Golf Club Set: Ram Laser ZX, 3-PW, cast cavity backed; 1,3,5 metal woods steel shaft w/Lampkin tour grips, \$325 obo; Call (847) 931-1235.

RENT

■ BATAVIA. Charming 2-BR, 2-BA home one block from river/bike path, Library. Wood floors, cook's kitchen, AC, ceiling fans, windows and storage. Beautiful deck, yard. Immaculate, delightful. No pets. \$1,275 + dep. Call Betsy at (630) 879-6082.

■ House in Summerlakes, 3 bdrm, 1 bath, 1 car garage. Stone fireplace, new carpeting, ceiling fan and light fixture in kitchen. Excellent neighborhood, Wheaton school district. \$1,175/mo plus 1st and last month security deposit. Call Tom or Barb (630) 252-6241 a.m. (630) 393-3688 p.m. & weekends.

■ Spacious 1 bdrm. apartment, St. Charles available end of June. AC, in building wash/dry, off-street parking, close to Lab. Plenty of included heat in the winter, quiet neighbors. Leo Bellantoni, x8772 or bellanto@fnal.gov; or John Petkus at (630) 584-4686.

■ Room for rent, includes kitchen and laundry privileges. \$350/month. No smokers. No pets. Month to month. In large, clean private home. Approx. 2 miles to Fermi highrise! Call Lou (630) 761-0118 and leave message.

WANTED

Someone to carpool with from Indiana. I live in Hammond, the commute is about 1 hour 15 minutes. Jacob Foor x2698 or (219) 845-5683.

FRENCH LESSONS

Je suis Française. J'enseigne le Français. Peggy-Henriette Ploquin. (630) 682-9048.

LAB NOTE

Summer Recreation

For information on summer recreation activities, visit the Recreation Office web site at: <http://fnalpubs.fnal.gov/benedept/recreation/recreation.html>

Announcing...

The FermiNews Essay Contest Winners

First prize:
Glenn Crawford,
experimental physicist, SLAC

Second prize:
Joe Lykken,
theoretical physicist,
Fermilab

The winning essays will be published in the next issue of *FermiNews*.



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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.

FermiNews welcomes letters from readers. Please include your name and daytime phone number.

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