WITH FLIP-BOOK

FERMI NEWS

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ALL-CDF ISSUE

Photo by Reidar Hahn

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INSIDE:

On A ROLL

by Kurt Riesselmann

In a major milestone for particle physics, the Collider Detector at Fermilab collaboration rolled the heart of its 5,500-ton detector into the Tevatron beamline on September 9 to begin a “commissioning run” for testing the thoroughly revamped apparatus.

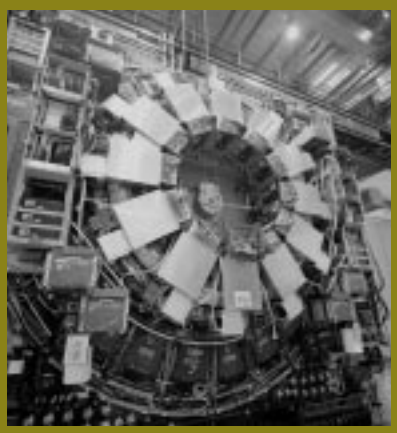
The roll-in marks a new stage in preparations for Collider Run II of the Tevatron. When Run II officially begins in March 2001, the 500-member CDF collaboration, along with an equal number of colleagues across the Tevatron at the DZero detector, will take up the search for new physics at the energy frontier: the Higgs boson, supersymmetry, extra dimensions and other exotic phenomena.

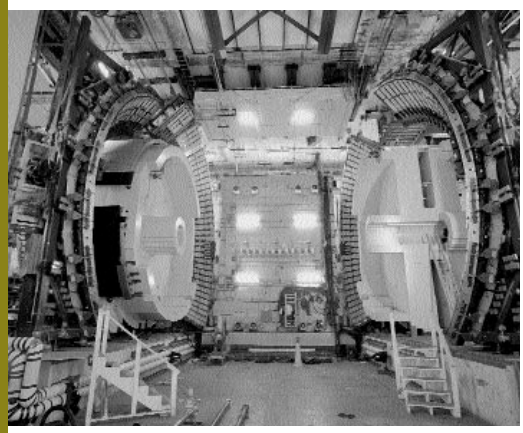
A team of technicians nicknamed “The Blue-Men Group” finished the three-day job of transferring the massive detector inch by inch from its assembly hall to the collision hall, right in the middle of the beamline of the Tevatron, the world’s highest-energy particle accelerator.

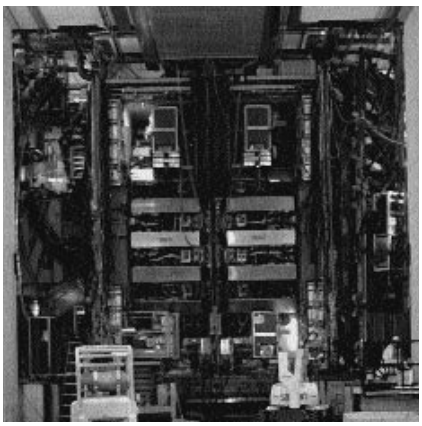
“Harry Carter and his colleagues only needed two days for moving our huge detector to the collision hall, a distance of 200 feet,” said Fermilab physicist Pat Lukens, member of the CDF collaboration. “That happened much faster than we had anticipated.

“On the third day, guided by Fermilab’s Alignment Group, they nudged the detector into its correct position, with the precision of half a millimeter.”

Cover: Physicist Young-Kee Kim of UC Berkeley is nearly lost in the empty space of the CDF assembly hall, where the detector was standing before the roll-in began.

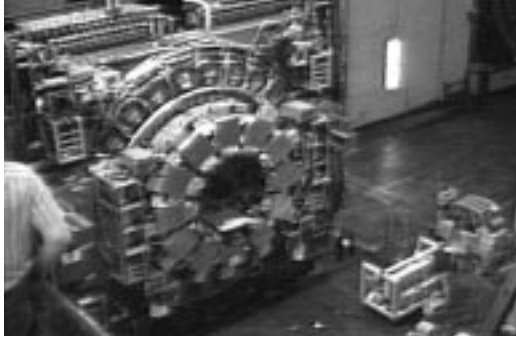






Photos by Fred Ullrich

The 2,500-ton heart of the CDF detector (left photo) had to be moved 200 feet to fill the big empty “detector parking space” (center) reserved inside the Tevatron beamline. The collision hall is the new home of the CDF detector (right). It took 3 days of precision work to move the detector to its final location.



Time-lapse photos provided by Particle Physics Division TV Controls and Visual Media Services.

Flip through the pages to see the CDF detector glide into the collision hall. In real time, the process took about 16 hours.

CDF detector

EDGES into POSITION to begin its TEST RUN.

Photo by Reidar Hahn

Fermilab physicist Pat Lukens inspects the proper positioning of one of CDF's two end caps inside the detector.

On A ROLL

Physicists around the world watched the roll-in as a web cam posted pictures on the CDF website. Moving the 30-foot wide and 35-foot long detector literally is a big task. The detector, which usually rests on the floor, can be lifted with eight hydraulic cylinders, each sitting on top of a set of steel-wheeled rollers. Once the detector is "air-borne," a second hydraulic system pushes the detector forward. If the wheels and the whole detector start to move in the wrong direction, the technicians lower the detector to the floor, re-align the wheels, re-lift the detector and try again.

Completion of this roll-in is the latest achievement in a series of steps that started after the CDF experiment recorded the last collisions of Tevatron Run I in February 1996.

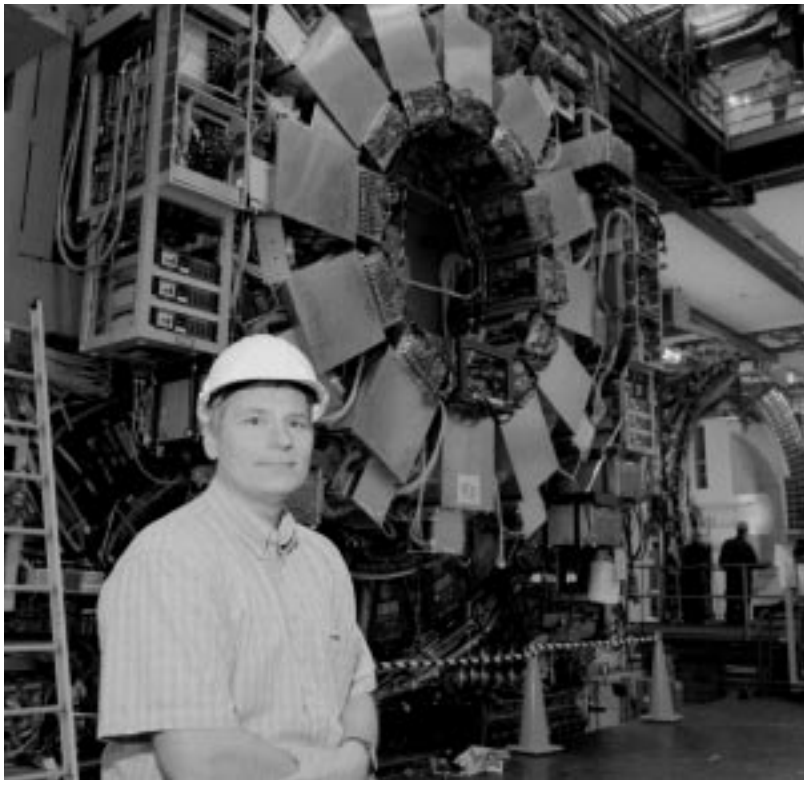


Photo by Fred Ullrich

Rich Stanek, project engineer responsible for accommodating the mechanical requirements of various detector subcomponents.

During Run II, set to begin in March 2001, the detector must handle a 20-fold increase in number of collisions compared to Run I. Each second, three million proton-antiproton collisions at a new record-high energy of almost 2 TeV, a ten percent increase, will leave their tracks inside the detector.

"The roll-in is a small but highly visible step of the whole installation process for Run II," explained Lukens. He and fellow physicist Rob Roser are in charge of CDF's Installation and Infrastructure group. They must orchestrate the complex integration of many different subsystems, built by scientists around the world, into one precisely functioning detector.

Before starting the roll-in, their team spent about two and a half weeks preparing the move by connecting cables of subsystems and installing end caps, the giant plug-shaped components that measure the energy of particles leaving the detector in the forward and backward directions. The end caps also serve as part of the iron yoke that carries a strong magnetic field, created by a superconducting solenoid inside the detector.

The CDF collaboration is completing what Lukens calls a "fast, partial installation" to get the detector ready for a six-week test run. It provides the first opportunity to test all detector components simultaneously, using a low number of collisions provided by a Tevatron test beam.

"Every group of scientists, of course, makes sure that their detector subsystem works," said UC Berkeley physicist Young-Kee Kim. "But when you put it all together, you have to make sure that there is no interference among the various electronic subsystems and that you synchronize the data they record."

Physicists need to eliminate the possibility that signals from two subsequent collisions, happening less than one millionth of a second apart, get mixed up. Kim is supervising the commissioning

Photo by Fred Ullrich

John Voirin, Wayne Shaddix, Harry Carter and Craig Olson (from left) are known as the Blue-Men Group at CDF. Under the critical eyes of physicists around the world, who watched via web cam, these technicians—outfitted with a new set of blue working overalls—moved the CDF detector to its new location at a speed of about 10 feet per hour.

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of the detector and its components. Her job is making all equipment function simultaneously.

"We have a meeting every day at 8:00 a.m. to talk about problems with the subsystems and to take steps to resolve them," Kim said. "It helped a lot that we could take data with large parts of the detector assembled using cosmic rays just a few weeks ago."

Kim's presence at Fermilab is so crucial that she took a year leave from her faculty position at the University of California, Berkeley. Since finishing teaching in May, she has been at Fermilab.

The countdown for the *full* installation of the CDF detector will begin in November. At that time, the test run will be complete, and the detector will roll back out to the assembly hall. Then, both the CDF collaboration and its neighbor down the beamline, DZero, have four months for gearing up their detectors for the final installation. For the CDF detector, this includes—among other things—the installation of the complete silicon central tracker, a very sensitive device that can precisely record particle tracks near the collision point. Presently, only a small part of the silicon tracker is in place, sufficient to test the system.

"We are still working on parts of the cooling system for the full silicon tracker," said Rich Stanek, project engineer for the CDF detector. "With the detector in the collision hall, we have the chance to observe unanticipated operational problems and make corrections before Run II begins in March 2001."

At the moment, the CDF collaboration is pleased with the progress they have made.

"It is beginning to look like a detector," Lukens said. He and Roser need to organize the teams that will operate and maintain the CDF detector during Run II. Physicists will work in round-the-clock shifts to supervise the experiment and its supporting equipment.

Kim is aware that right now—with the roll-in complete—she may actually have the biggest job to be done. Proper functioning electronics is elementary to recording particle collisions. The success of the cosmic ray test was a first step that made her—and the whole CDF collaboration—very happy.

Anticipation and excitement are rapidly increasing.

"We can do it," Kim said. □

Posted on the door to Kim's office, this World War II-era poster captures the spirit of the effort.

Photo by Reidar Hahn

Starting in March 2001, the CDF detector subsystems will observe 3 million particle collisions per second. UC Berkeley physicist Young-Kee Kim must ensure that the signals registered by the different components are read out and synchronized correctly.

CDF upgrade project is all challenge, all the time—and now it's almost completed.

Photo by Fred Ullrich

This Is Your Life, Bob and Cathy

by Mike Perricone

Now that they've managed a project lasting seven years, facing frequent and stringent reviews, involving a thousand people and $110 million, directly affecting the future of Fermilab and the entire field of particle physics, Bob Kephart and Cathy Newman-Holmes can testify that the job does not become part of your life.

"No, it swallows your life whole," said Kephart, co-project manager with Newman-Holmes of the CDF upgrades for Run II of the Tevatron. "It's a big project in terms of dollars, of people, of almost any measure you can imagine."

With the massive, virtually reinvented detector rolling out of the assembly hall and into the collision hall to begin its commissioning run, Newman-Holmes also can imagine the credits rolling—and rolling, and rolling, as they do at the end of a major Hollywood movie. The cost and scale of the project have been similar, with the numbers of people involved, the layers of complexities and different skills required, the sheer scope of the effort and coordination, the exhaustive attention to detail, and the startling thought that all those individual components and subprojects have actually come together as a finished product.

Cathy Newman-Holmes

"Maybe I could be a producer," Newman-Holmes joked. "But I thought this might be a good way to give someone a feel for what it means to manage a hundred-million-dollar project. Making a movie also involves a lot of different people. There is also an element of creativity. You don't do something exactly like what has already been done, if you want a really good movie—or in our case, a really good detector."

Of course, there are also major differences.

"The CDF upgrade took a lot longer than making a typical movie," she pointed out. "I suspect we spent relatively more on 'stuff' and less on salaries. We certainly didn't have marketing expenses which are maybe half the cost of making a movie. And as Bob notes, a large fraction of a movie's cost often goes to paying only a few stars. The result is that the CDF upgrade really is bigger and more complex than making a movie—well, maybe except for *Titanic*."

◄ CDF towers over its upgrade project co-managers, Cathy Newman-Holmes (left) and Bob Kephart.

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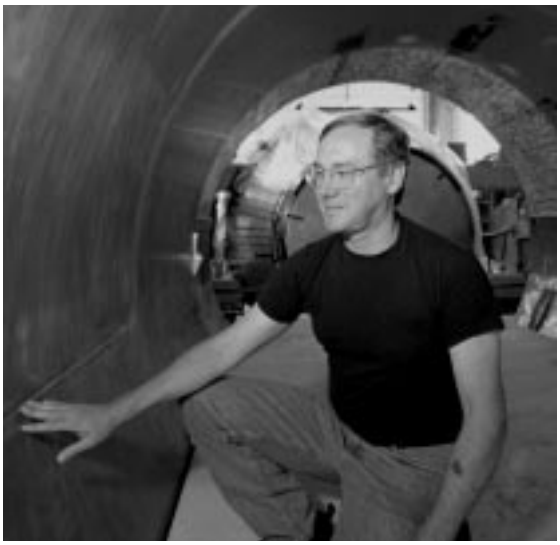


Bob Kephart

Drawing parallels with big manufacturing projects in private industry further highlights the unique nature of the upgrade.

Said Kephart: “If you try to explain to someone from industry how you can do a project on this scale, where many of the people who are doing it actually don’t work for you, and who come from more than 50 different institutions all over the world—they throw up their hands and can’t imagine how it could possibly work. And it can only work because you have very smart people who are all dedicated to making it work. The project leaders are absolutely crucial, particularly our project engineer, Rich Stanek, and our financial person, Connee Trimby, and all those people who made our lives much easier than they would have been otherwise.

“It’s not a 40-hour week,” Kephart continued. “It can be very intense for weeks at a time. We might be dealing with a crisis, or having a [Department of Energy] review, or getting ready for the commissioning run. Even if there isn’t a crisis happening, there are always the dual roles as project manager and department head. There are the personnel and financial issues of running a department. Layered on top of that is the project itself. As a DOE project, we track costs and milestones, and periodically undergo a review to ensure that we’re making progress at the required rate and staying within budget.”

Among the greatest challenges: increasing expectations of the luminosity to be produced by the new Main Injector and the improved Tevatron meant replacing the entire tracking system.

The Central Tracking Chamber, for example, had 6,000 wires in its first incarnation; for Run II, the chamber has 30,000 wires. Another major challenge: building what Kephart called “by far the biggest and most complex silicon detector yet built for a high energy physics experiment.”

“We pushed industry to do things that were right on the edge of their capabilities,” Kephart said.

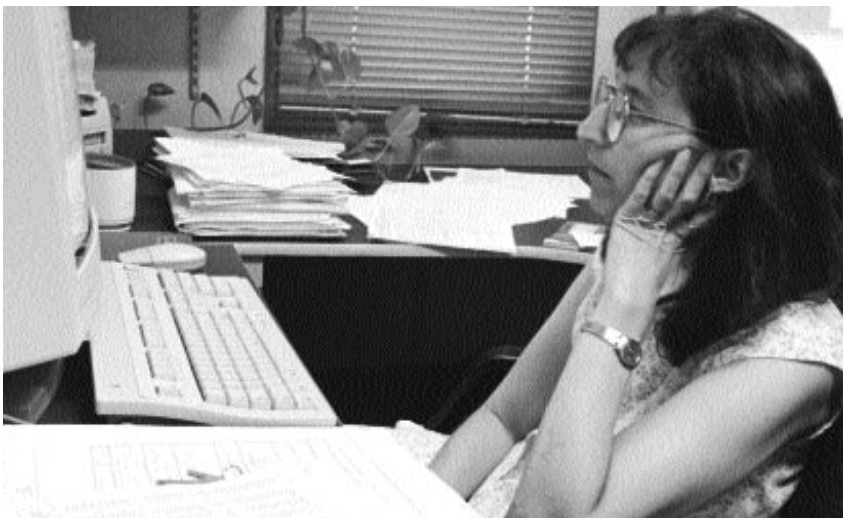
There was also the push to have a life in “all-Run II” households. Kephart’s wife, Karen, has worked on the CDF outer tracker and currently works at the silicon detector (SiDet) facility. Newman-Holmes’s husband, Steve Holmes, now Associate Director for Accelerators, was project manager for the Main Injector.

“There were some times when I had to check my watch and dash out when we were in the middle of a meeting,” said Newman-Holmes. “People have been very understanding.”

The detector will undergo a commissioning run until November, when it will be rolled back into the assembly hall. The test version of the silicon detector will be removed and replaced with the final version now being completed at SiDet. The remaining electronics, and components of the muon system will be installed, and the detector will be ready for collisions when Run II of the Tevatron begins on March 1, 2001—the end of one chapter and the beginning of another, as Newman-Holmes said.

“That’s the big milestone,” Kephart said. “Cathy and I can think about doing physics again.” □

“One of our major challenges was just getting things from vendors that were hard for the vendors to make,” said Newman-Holmes. “We had problems all over the place, things that just turned out to be lot harder than the vendors thought, things that took a lot longer than expected and involved a lot more difficulty.”



Photos by Reidar Hahn

Photo by Reidar Hahn

Many (not all) of CDF's experimenters gathered in front of Wilson Hall in 1994.

CDF SNAP SHOT

525
Number of physicists in the CDF collaboration (give or take).

54
Number of institutions represented in the CDF collaboration.

11
Number of countries represented in the CDF collaboration.

29
Number of U.S. institutions and universities represented in the CDF collaboration.

1,000
Estimated number of people participating in CDF Run II upgrade project.

800
Number of miles of cable installed in CDF upgrade for Run II.

38,808
Total number of cables identified in CDF cable database, including cables from Run I.

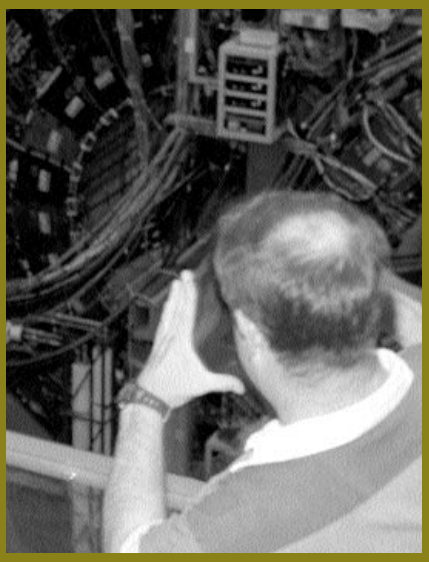
$110,000,000
Estimated cost of CDF Run II upgrade project.

46,000
Number of electronic data channels in CDF silicon system in Run I.

800,000
Number of electronic data channels in CDF silicon system in Run II.

6,000
Number of wires in CDF Central Tracking Chamber in Run I.

30,000
Number of wires in CDF CTC in Run II.



CDF physicist Rob Roser frames up a shot of the big detector.

CDF's old central tracker, where the top quark was observed.

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3.5

Time in microseconds between particle collisions at CDF in Run I (a microsecond is a millionth of a second).

.132

Design limit for time in microseconds between particle collisions at CDF in Run II; it will begin at .396 microseconds.

9/13/85

First observation of proton-antiproton collisions by CDF collider detector at 1.6 TeV center-of-mass energy.

Evaluation of the first proton-antiproton collisions recorded by the CDF detector in 1985.

1/5/93

Infamous headline, "315 Physicists Report Failure In Search for Supersymmetry" appears in *The New York Times*. The reference is a paper signed by 315 CDF collaborators in the Dec. 14, 1992 issue of Physical Review Letters.

43

Number of events identified (so far) at CDF as consistent with top quark production.

50,000,000

Number of events recorded on data tape that had to be sifted to produce those 43 top quark events.

1985

First graduate student thesis completed at CDF (G. Chiarelli; University of Pisa, Italy; March 1985; *"Detection of Heavy Flavours and New Particles at the Tevatron Collider"*).

1

Number of graduate student theses at CDF in 1985

179

Total number of graduate student theses at CDF, 1985-2000.

1988

First publication of physics results from CDF: "Transverse-momentum distributions of charged particles produced in p anti-p interactions at s**(1/2) = 630 and 1800 GeV," F. Abe *et al*., The CDF Collaboration, *Phys. Rev. Lett.* 61, 1819 (1988).

1

Number of publications of physics results from CDF in 1988.

24

Number of publications of CDF physics results in calendar year 2000 (up to September).

211

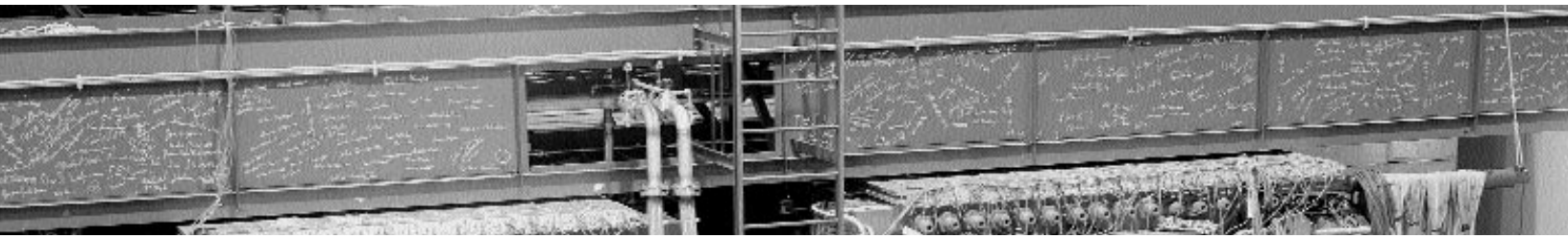
Number of publications of CDF physics results, 1988-2000.

3/3/95

Announcement of top quark discovery together with DZero collaboration.

2/5/99

Report of signs of matter-antimatter asymmetry in *b* decays at CDF.



Particles aren't the only ones that leave their signatures at CDF. So do the people who work on it.

Dial 1-630-CABLE ME

by Mike Perricone

They wired CDF for the roll-in, pausing for a portrait in the cable mover atop the detector: (front row, from left) Dervin Allen, Jim Humbert, Tom Olsem, Chuck Pribyl, Wayne Shaddix; (back row, from left) Chris Richardson, Lew Morris, Mark Shoun, George Wyatt, Jim Hoover, Steve Sorenson, Manuel Seales, and Jamie Grado. Not pictured is Henry Schram.

Photos by Reidar Hahn

Dervin Allen and his group of cable installers are just the folks you'd like to be able to call to wire up that new combination telephone/computer/satellite dish/home entertainment center. But they have a few thousand other things keeping them busy.

This group of Fermilab veterans has just put the finishing touches on some 800 miles of precisely placed, meticulously identified, tenderly shaped and obsessively catalogued cabling that will carry the lifeblood of electronic information to and from the revamped CDF detector in Run II of the Tevatron.

"These are the veins and the arteries," said Allen, who came to the lab in 1983 to build magnets, then joined CDF in 1984 and took part in some of the detector's original wiring installation.

Much of the cable is run through a structure called the cable mover, designed to move as a component along with the 5,500-ton detector when it moves to and from the collision hall. The cable funnels into the cable mover, then fans out to connect with the individual components.

Although Allen is the cabling group's only veteran from CDF's origins, most of the members have worked at the lab for a decade or more.

"The group was assembled from other parts of the lab, and we've been together about five years," Allen said. "Having experience around the lab has helped a lot. They've done a great job with great teamwork. This is a very painstaking and time-consuming job."

Bob Kephart, co-project manager for the CDF upgrade, noted the degree of difficulty in assembling many different kinds of cable and optical fiber, with specifications from many different experimental groups; in placing the cable across a detector with a complicated geometry and many moving parts; and doing it in a hurry.

"Dervin did an excellent job," Kephart said. "He formed a very effective group from a diverse collection of technicians, gathered from all over the Particle Physics Division and from term and temporary hires. They worked as much as 20 hours a day for many months to get everything done on time."

Allen estimated that Run II requires at least 30 percent more cabling than did Run I. Consider that just one component of the upgrade, the Level One

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Dervin Allen's group

goes the extra mile(s) to get CDF wired for ROLL-IN.

Trigger, involved the placing of some 1,700 wires, with a specific destination for each end, with each wire labeled as to its function and location, and with all that information entered into a database with records for 38,808 cables that have existed throughout the history of CDF. Even if a wire is removed from the detector, its tale remains in database.

"We'll enter comments, for example that a specific cable has been removed," Allen explained. "But someone looking in the database can find a cable that they remember from 15 years ago. They may find that the cable was removed on a certain date and no longer exists, but it was there at one time."

Virtually all the cable used in Run I was stripped from the detector, though some has been recycled for Run II. Especially valuable is a distinctive flat signal cable, made of 50 equally spaced individual copper wires. Fast and reliable, the cable is no longer being produced, necessitating the recycling.

"It's a very stiff cable, not at all user-friendly when it comes to being installed," said Allen. "We can't have twists and turns."

Stiff cable is a distinctive challenge, because all the wiring must be installed with a uniformly smooth sine curve to instill a "memory" for movement. Since the big detector is designed to move to and from the collision hall, and since individual components must be accessible, the cables have to move in predictable ways and return to their original configuration. They must be well "dressed." Otherwise, it's cable chaos.

"Putting the cables in nice and neat, bundling them, mounting them on brackets, putting in the proper sine wave, all are part of what we call dressing," Allen explained. "With the amount of cable we have on the first and second floors, from the control room and the counting rooms, we'd run out of space if we didn't install it neatly dressed."

The procedure from start to finish must be equally orderly. Individual groups within the detector (for example, the Central Outer Tracker) decide what's necessary for their individual and uniquely designed chambers. They e-mail a job request to Allen, who enters the information into the cable database.

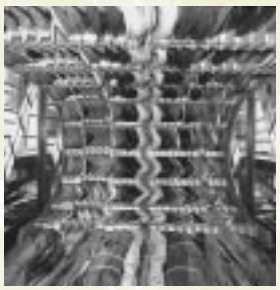
Labels and spreadsheets are printed from the database, detailing a cable's function and the geographic locations for each end by area, crate and individual card and slot. Labels are affixed to the cables, spelling out its functions and geographic locations for both ends. In pulling in the cable, the crews are split to work backward from each end, dressing the cable toward its midpoint to produce even lengths and prevent any confusing excess. Then the ends are attached to the correct destination. The detector's commissioning run will show any needed modifications.

Allen's schedule is constantly full. He works two nights a week in the Information Technology department at nearby Waubonsie College, coaches his son's Little League baseball team, and is a dedicated gardener. Allen's wife, Linda, is a networking architect for voice and data systems at R.R. Donnelley. They and children Natalie, 7 and Brandy, 11, recently vacationed in Alaska, viewing glaciers and the great mountain, Denali, and cruising the Inside Passage.

"The glaciers are unbelievably beautiful, and two glaciers side by side can be completely different because of the terrain beneath," Allen said.

Allen was especially pleased that the cruise offered "seven days without the phone ringing," but all of CDF was happy to have him back on call and keeping things connected.

"We've been fortunate to have a person of Dervin's skill and dedication in charge of this important job," said Cathy Newman-Holmes, co-project manager of the upgrade. "It doesn't matter how good the detector is or how good the data acquisition system is. If they're not connected together properly, they are useless."



Well-dressed cable doesn't just look neat; it's essential for the functioning of CDF. As cabling group head Dervin Allen says, "If we didn't install all the cable neatly dressed, we'd run out of room."

CDF STEPS UP to the Plate

Spokesmen prepare to hit (Home) Run II

Photo by Reidar Hahn

Al Goshaw

by Judy Jackson

A year ago, Fermilab Director Mike Witherell laid it on the line. The era of detector schedule slips at Fermilab was over. Collider Run II at the Tevatron would begin on time, on schedule, on March 1, 2001. Period.

"I believe we now have a schedule that we have a good chance of meeting," Witherell said in an October 1999 *FERMINEWS* story. "But it won't be easy. From here on…the things with the most impact on the schedule are under the collaborations' control. Now it is up to them to step up to the plate."

Message received.

"The lab has made clear that we will have the resources we need," said CDF cospokesman Al Goshaw, in the same story. "Now—that's it. That's the schedule we have to meet. If we fail this time around, we all have the message that it would be very damaging not just to Fermilab but to high-energy physics. We have a big responsibility to make this happen."

That was last October. At the time, Goshaw and CDF cospokesman Franco Bedeschi were clearly determined that the $110 million reinvention of the detector that found the top quark would finish on time. Equally clearly, they were seriously worried about whether they would succeed.

Now, a year later, the white knuckles of CDF's cospokesmen have given way to relieved smiles.

On September 7, right on schedule, CDF began rolling into the Tevatron tunnel for a six-week commissioning run. Bedeschi was in the CDF control room when the detector recorded its first test collisions, from cosmic rays in the atmosphere.

"Getting the first collisions in the detector, after five years of work, was so exciting I could hardly believe it was happening," Bedeschi said. "I went out to a grocery store and bought two bottles of champagne."

The experience was all the sweeter because, in late August, unexpected magnet problems in the Tevatron almost scuttled the commissioning run.

"There was a moment when I was afraid there would be no roll-in, with the accelerator difficulties," Bedeschi said. "It wouldn't have made sense to roll in without beam in the Tevatron. It is nice to see that the accelerator has picked up speed."

Very nice.

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The commissioning run will last until about November 1. Then CDF will roll back out into the assembly hall for installation, in early December, of its long-awaited SVX II silicon detector, and final preparations for Run II.

"Last fall, when we committed to the late summer roll-in," Bedeschi said, "we were determined, but there were still many uncertainties. There was still a lot of guesswork. But now, I think we are out of the woods. All three barrels of SVX II are done. There are a lot of little things to be understood, but they are all standard problems of commissioning a complicated detector. I can now say confidently that we will be ready to go on March 1."

How did they get from last fall's white knuckles to today's confident stance?

"We all worked hard on all aspects," Bedeschi said. "When crises developed, we pulled people from everywhere. We jumped on every crisis. It was very important to have a goal and a deadline. The fact of the commissioning run schedule was an important stimulus. If it had been cancelled, momentum would have slowed. Now, it is wonderful to see things picking up speed. Professors are starting to bring their graduate students. They are getting apartments, getting settled."

Recent reports from CERN, the European Laboratory for Particle Physics, of possible hints of the long-sought Higgs boson, the particle theorized to confer mass, have upped the excitement at CDF. Whether or not the Higgs will show up in Run II at Fermilab depends directly on how many collisions the detectors can log in the time available.

Goshaw explained.

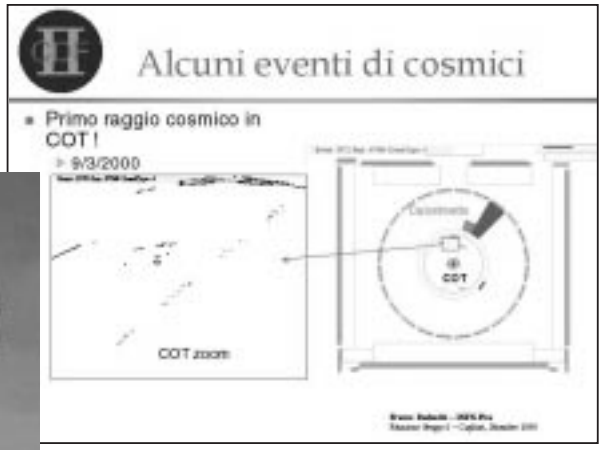


Photo by Jenny Mullins

It works! CDF cospokesman Franco Bedeschi proudly took transparencies showing the first cosmic-ray events with him on a recent trip back home to the University of Pisa. The events show that the detector is working the way it is supposed to.

Franco Bedeschi

"The discovery of a 115 GeV/c^2 Higgs would start with hints (few sigma effects), going through evidence (three sigma or so) and onto a solid discovery at, say, five sigma. Based on our Run II studies, combined CDF/D0 data would yield hints at about 2 inverse femtobarns (a measure of the total number of collisions observed), evidence at about five, and for discovery something like 10-15. So, depending on how well the accelerator performs, you can make an estimate of 'when.' If we have a good Run IIa, we could have 'evidence' by early 2004, but discovery would still require Run IIb data. We can always hope to do better when we actually have data to work with, as we did with the top. I expect we will, but for now that's the best we can say."

Bedeschi spelled out what that means for his collaborators.

"If we want an unambiguous Higgs discovery at Fermilab in Collider Run II, we had better get started," he said. "There is no time to mess around. We have a lot to do, and the search for the Higgs gives an increased urgency to a good start. It will take everything we've got."

the

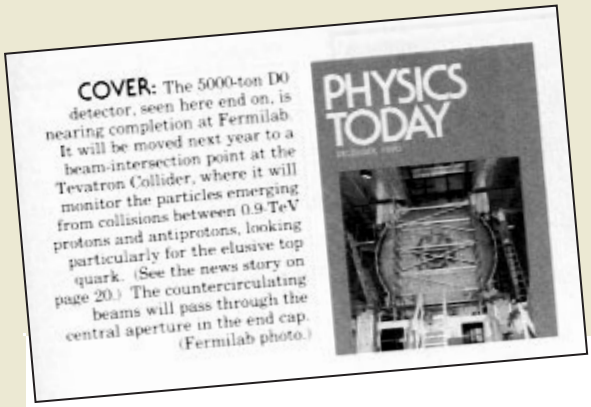
Correction: DZero *IS* just another pretty detector

From last issue's Talk of the Lab: "Not just another pretty detector…"

"CDF gets on the cover of the physics equivalent of *Vogue*—*Physics Today*.

"Not DZero. DZero looks like a big metal tank. The kind you might find buried beneath your corner gas station. An off-white metal tank. What happened? Did they run out of high-gloss paint when they got to the detector across the ring?

"True, DZero has wonderful, wonderful things inside: beautiful trackers and solenoids and chambers and calorimeters—gorgeous calorimeters—and silicon. Fantastic stuff. And true, as your Mom told you in junior high, it's what's inside that counts. Absolutely. No question. But when was the last time you saw DZero on the cover of anything? (Sure, *FERMINEWS*, but that's like making the cover of your Mom's photo album. She loves you no matter what you look like.)…"



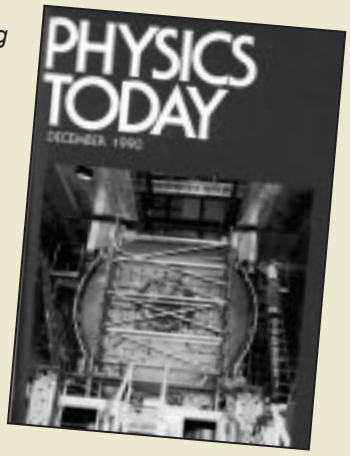
of

From Lawrence Berkeley Lab theorist Bob Cahn:

I think DZero was, in fact, on the cover of *Physics Today*. If I remember correctly, the cover showed the endcap calorimeter, an LBL project.

Bob

From DZero founding father, Paul Grannis:



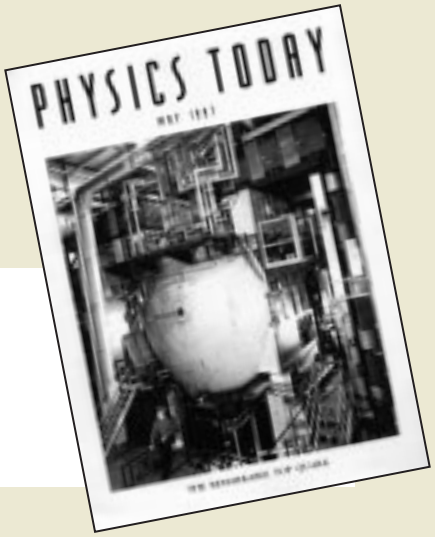
FERMINEWS was waiting when I came home... looks nice, but have not had a chance to read yet. But re your 'Not just another pretty detector' article (which looks fun), have a look at *Physics Today* Dec. 1990 cover photo!

Best,

Paul

the

And finally, "For the mothers of DZero collaborators" from Fermilab theorist Chris Quigg, courtesy of modern desktop graphics:



CALENDAR

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

International Film Society Presents:
HALLOWEEN SPECIAL!
Friday, Oct. 27, 8 p.m. Ramsey Auditorium, Wilson Hall. $4, $2 for Fermilab grad students. *The Rocky Horror Picture Show*. Dir: Jim Sharman, UK (1975), 100 min. THE cult classic of all time. Outrageously kinky horror movie spoof.

Fermilab Art Series:
Shangri-La Chinese Acrobats
October 28, 8:00 p.m., Tickets $18/$9 ages 18 and under. For information 630-840 ARTS. The Shangri-La Chinese Acrobats from Taiwan offer a breathtaking glimpse of the Orient: formidable feats of daring and balance, explosive Kung-Fu, brilliantly costumed traditional dancing and even a touch of Chinese comedy.

ONGOING

NALWO
Free English classes in the Users' Center for FNAL guests, visitors and their spouses. The new schedule is: Monday and Friday, 9:30 a.m. – 11:00 a.m. Separate classes for both beginners and advanced students.

RECREATION OFFICE
Movie tickets, DisneyQuest passes and entertainment coupon book available at discount prices. Details at fnalpubs.fnal.gov/benedept/recreation/announce.html

Muscle toning classes. Schedule online at fnalpubs.fnal.gov/benedept/recreation/classes.html

BOOK SALE
Book Fair in the Atrium on October 11, 10:00 a.m. - 6:00 p.m., and October 12, 7:00 - to 3:00 p.m. Savings of up to 70%. Pre-display of some titles on Monday, October 9.

DANCING
International folk dancing, Thursdays, 7:30-10 p.m., Village Barn, newcomers always welcome. Scottish country dancing, Tuesdays, 7:30 – 10 p.m., Village Barn, newcomers always welcome.For information on either dancing group, call Mady, 630-584-0825 or Doug, x8194, or e-mail folkdance@fnal.gov.

The Fermilab Barn Dance series, featuring traditional square and contra dances, takes place every second Sunday evening at 6:30 p.m., Village Barn. Next event: October 8. Come with or without partner and family. Admission: $5 for adults, $2 age 12-18, free for under 12. For information contact Dave Harding, x2971 or Lynn Garren, x2061, or check the webpage at www.fnal.gov/orgs/folkclub/.

MILESTONES

BORN
■ Allison Pearl on September 17 to Jerry (Beams Division) and Leslie Leibfritz.

Ph.D.
■ Andrew Alton, Kansas State University, finished his thesis working on the NuTeV experiment (E815).

HONORED
■ Fermilab experimenter Shin-Hong Kim, of the University of Tsukuba (Japan) and CDF, by the National Academy of Science of the Republic of Korea, in ceremonies on September 18 commemorating the 45th Annual NAS Awards.

RETIRING
■ John Rossetto, ID 1666 BD-AS-Cryogenic Systems, September 29.

■ Milton Martin, ID 1586, BS-MA-SU Supply Service, September 28.

LAB NOTES

Computing Workshop
Fermilab will host the 7th International Workshop on Advanced Computing and Analysis Techniques in Physics Research, October 16-20, 2000. The workshop will cover Artificial Intelligence, Innovative Software Algorithms and Tools, Symbolic Problem Solving and Very Large Scale Computing in High Energy Physics, Astrophysics, Accelerator Physics and Nuclear Physics. The workshop will include plenary and parallel sessions, featured talks, working group and panel discussion sessions.

A technology show will feature a variety of hardware and software demonstrations. For program details please visit the web page: http://conferences.fnal.gov/acat2000/. If interested in participating, please register on-line as soon as possible.

LUNCH SERVED FROM
11:30 A.M. TO 1 P.M.
$8/PERSON

DINNER SERVED AT 7 P.M.
$20/PERSON

Chez Léon MENU

FOR RESERVATIONS, CALL X4512
CAKES FOR SPECIAL OCCASIONS
DIETARY RESTRICTIONS
CONTACT TITA, X3524
HTTP://WWW.FNAL.GOV/FAW/EVENTS/MENUS.HTML

LUNCH
WEDNESDAY, OCTOBER 11
Booked

DINNER
THURSDAY, OCTOBER 12
Vol-au-vent with Mushroom Duxelle
Stuffed Pork Loin
with Lingonberry Cream Sauce
Braised Red Cabbage
Roasted New Potatoes with Dill
Danish Apple Cake

LUNCH
WEDNESDAY, OCTOBER 18
Prosciutto and Three Cheese Calzone
Arugula and Red Pepper Salad
Espresso Coupe with
Dark Chocolate Sauce

DINNER
THURSDAY, OCTOBER 19
Rigatoni with Vodka Tomato Sauce
Scallops with Cider Gewurztraminer and Sage
Lemon Thyme Orzo
Vegetable of the Season
Romaine and Blue Cheese Salad
Pear Amaretto Turnovers

FERMINEWS

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The deadline for the Friday, October 20, 2000, issue is Tuesday, October 10, 2000. Please send classified advertisements and story ideas by mail to the Public Affairs Office MS 206, Fermilab, P.O. Box 500, Batavia, IL 60510, or by e-mail to ferminews@fnal.gov. Letters from readers are welcome. Please include your name and daytime phone number.

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CLASSIFIEDS

FOR SALE

■ '97 Chevy Blazer LT, 25k miles. Burgundy exterior, gray leather interior; V6 engine; Auto, A/C, P/S, anti-lock brakes; power windows, power door locks, power mirrors, power seats, tilt wheel, cruise control, air bag, AM/FM Stereo, Compact Disc, Premium Sound, Moon Roof, Roof Rack, Privacy Glass, Alloy Wheels, hitch, security system. Asking $18,500 or best offer. Call 978-1565 or e-mail: marih@fnal.gov.

■ '96 Ford Taurus GL sedan, V-6 auto, 97.5K highway miles, excellent condition. Dark green, AC, ABS, AM/FM cassette, cruise control, airbags, power windows, mirrors, seats; newer brakes, timing belt, tires. Asking $6,000. Call Vladimir at x4802, evening 815-756-6099 or e-mail sirotenko@fnal.gov.

■ '94 Chevy Camaro Coupe for sale, teal, V6 automatic, a/c, power steering, windows and locks, cruise control, am/fm stereo cassette plus 8 disc cd changer, dual air bags, 78K miles, some minor exterior repairs needed. Retail value $8,500 Selling for $6,000 obo. Call Syretta, x2791 or e-mail smurry@fnal.gov.

■ '92 Honda Civic EX, 74k, excellent condition, automatic, red, near new tires, brakes, battery, exhaust system. Moon roof, AC, AM/FM cassette, driver's airbag, ABS brakes. Original owner, asking $6,037. Call 630-840-3922 (day) or 630-293-9349 (eve).

■ '90 Pontiac Grand Am Silver Rado,4 doors, A/C new parts (radiator, water pump, belt) $2,200 obo. Luisa at 630-840-6691 or mail to chiesa@fnal.gov.

■ Motorcycle: '80 Suzuki GS550E, only 8,000 miles, runs good, $450 obo. Matt, 208-1751.

■ 4 Chicago Bears tickets for game 5 versus the New Orleans Saints, noon on Sunday October 8th. Sec. 25, Row 26, Seats 15, 16, 17, 18. Face value of $44 each, obo. Matt, 208-1751.

■ Electric dryer, works well. $50 obo. 836-9151, ask for Drew or Julie.

■ Sears 10 HP Riding Lawn Tractor LT10-36. 36″ wide cut. Needs new deck. 20 years old but runs good. $200.00 obo. Call Bud, 630-365-6100.

■ Treadmill, Weslo Cademce with incline, $75 (new $300). Wallace, x3650.

■ Acer, Intel 486, Windows 3.1, includes: monitor, CPU, keyboard, mouse and HP 660 Deskjet printer. $250 obo, mclayton@fnal.gov.

■ Boy's 12-speed, 24″ mountain bike-Huffy "Sledge Hammer;" little used, very good condition. $55. Call Barry at x2230 or 630-879-5339.

■ Thule roof rack, 50 inch bars. $40. Call Gary, x4836.

■ Girls white bedroom set, twin beds, 2 dressers, mirror, nightstand, $200. Family room furniture couch, coffee table, lamp and lamp table, neutral colors, $300. Living room furniture, couch, love seat, coffee table, 2 lamp tables, 2 lamps, $500. Call weekdays after 6 p.m.: 630-820-1955.

■ Couch and loveseat, neutral colors, $300. 630-406-9436.

■ Zenith projection TV, 45 in, needs work, to be given away for free. If interested contact Bill at x4597 or ng@fnal.gov.

■ 3-year old male cockatiel, cage, accessories. Very friendly and talkative, $50. Lifetime portable basketball hoop. Used lightly for one season, sold new for $150, selling for $50. Proform stepper, electronic controls $25. Call x3230

WANTED

■ Rototiller, must be working x6633.

■ Tree seeds: Bur Oak, Red Oak, White Oak, Shagbark Hickory, Butternut Hickory. The seeds should be separated by species, dried and kept cool. People can drop the seeds off at Roads & Grounds or call x3303 for pick up.

■ The Fermi Wednesday bowling league needs a couple of bowlers. Break up that week and relax, have some fun at Bowling Green in West Chicago. We are 2 bowlers short for a 12 team league. Call Dale Miller at x3875. Come on down.

■ Pumpkin Launchers unite! Streamwood Park District invites intrepid builders to compete at Pumpkinfest, Sat Oct 14. Come with a launcher created using household/hardware material. Fee includes 2 pumpkins to fling, judged for best distance. Winners in 4 categories. Pre-registration required. For brochure call Paula, x4505, or Lori at Park District, 630-372-PARK, ext. 111.

FOR RENT

■ Room for rent on independent floor with living room. One car garage and use of kitchen and laundry, in calm residential Naperville. $395/month. Call 840-2574.

■ Spacious 2-bedroom condo to share (1st floor). Close to Fox Valley Mall and 15 minutes from Fermilab at Coventry Court (New York and Frontenac). Gorgeous and peaceful lake view. Better long term plans. No lease required. $500/month (all household facilities included). Contact Juan Pablo at fernand@fnal.gov, x8630 or 851-3243.

■ Wanted: 2-3 bedroom apartment or house, between Fermilab and Schaumburg, must allow two cats, between $750 to $900. Contact Melissa, x6667 or mclayton@fnal.gov.

■ Roommate(s), female preferred, must like two cats, no smoking in common areas. Still looking for apartment, must be able to pay $375 - $450 not including utilities. Contact Melissa, x6667 or mclayton@fnal.gov.

http://www.fnal.gov/directorate/public_affairs/ferminews/

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