FERMI NEWS

FERMILAB A U.S. DEPARTMENT OF ENERGY LABORATORY

Congressman Ehlers 2

Photos by Reidar Hahn

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INSIDE:

They're both physicists, they're both from Michigan and they both speak Dutch. Harry Weerts, left, is a professor of physics from Michigan State University, a citizen of the Netherlands and cospokesperson of the DZero experiment. Ehlers, of Dutch ancestry, is a former physics professor at Calvin College and a Michigan congressman. Fermilab physicist Joe Lach (center) and Ehlers were Ph.D. students together at the University of California at Berkeley.

Cover: Congressman Vern Ehlers (R-MI) surveyed the Fermilab site from the 15th floor of Wilson Hall. The congressman asked Fermilab Director Michael Witherell (left) about the Laboratory's plans and hopes for building a future accelerator on the site.

Congressman

by Judy Jackson

"Als U Nederlander bent, spreekt U nog Nederlands?" asked U.S. Congressman Vern Ehlers of Michigan. He was speaking to DZero cospokesperson Harry Weerts, a professor at Michigan State University, a citizen of the Netherlands, and one of Ehlers's tour guides for the congressman's December 8 visit to Fermilab.

"Natuurlijk spreek ik nog Nederlands. Wat is een Nederlander die zijn moedertaal niet praat ?" Weerts replied.

Roughly translated, Ehlers, of Dutch ancestry, asked Weerts, "If you are from the Netherlands, do you speak Dutch?"

To which Weerts replied, "Of course I speak Dutch, I ***AM*** *Dutch."*

"I was rather surprised," Weerts said later.

And no wonder. It's not too often that Dutch-speaking physicist-congressmen pass through Fermilab. In fact, when Ehlers, a nuclear physicist with a Ph.D. from the University of California at Berkeley, was elected in 1994, he became the only physicist ever to serve in Congress; and for four years he remained the only one. Not since the time of Benjamin Franklin had a physicist held a comparable legislative post in the U.S. government. Then, in 1998, the election to the House of physicist Rush Holt, of New Jersey, doubled the number of physicist-legislators.

"I calculate that at this doubling rate, by 2028 the entire Congress will consist of physicists," Ehlers told a standing-room-only crowd at Fermilab—an audience who clearly felt such a demographic shift would be highly desirable. Meanwhile, Ehlers told the Fermilab scientists, Congress has little understanding of science—and when it comes to politics, scientists are "clueless." To help bridge the gap, he urged physicists to become more politically involved, not simply by making their traditional evangelizing trips to Washington, but by donating to election campaigns and volunteering time to help candidates they support.

Ehlers Visits Fermilab

The former Calvin College physics professor described his own entry into national politics, a career he had not envisioned, via local political involvement in his home town of Grand Rapids. He recalled sending a letter to his then-congressman, another son of Grand Rapids, Gerald Ford, in which he offered free scientific advice if Ford should ever want it.

"I expected to receive a polite form letter in reply," Ehlers said. Instead, Ford called him the next day, asking him to become his scientific advisor. Thereafter, Ehlers and other scientific colleagues met regularly with Ford, who told Ehlers he enjoyed these scientific gatherings, because "you are the only people who ever visit me who aren't asking for anything."

Photos by Reidar Hahn

Ehlers told a Fermilab audience that, while Congress may not know much about science, scientists are politically "clueless." He urged his fellow physicists to bridge the gap by becoming involved in the political process.

Congressman Ehlers

Operations chief Bob Mau explains particle acceleration to Congressman Ehlers in the Fermilab Main Control Room. Looking on is Michael Lach, a physics teacher who is spending a year as an Einstein Fellow on Ehlers's staff.

Particle physics and pool—they're both about collisions. The particle pool table at Fermilab's Lederman Science Center lets kids analyze collisions on the macroscopic scale to help them visualize what happens when subatomic particles collide, Fermilab education specialist Spencer Pasero explained to Mr. Ehlers.

Photos by Reidar Hahn

Fermilab physicists, however, cannot be counted among those who aren't asking for anything from Congress, as their questions to the congressman indicated. Ehlers sympathized with the difficulty they expressed in communicating the benefits of particle physics in persuasive terms, and of garnering congressional support for expensive new scientific facilities. A member of the House Science Committee and the author of a recent science policy study, Ehlers demonstrated his familiarity with such issues.

Ehlers cited the late California Congressman George Brown's assertion that the United States does not have a science policy, but rather a budget policy for science. In an effort to address the national science policy vacuum, and at the request of former House Speaker Newt Gingrich, Ehlers led the 1998 Science Committee effort that produced the well-received report, "Unlocking Our Future: Toward a New National Science Policy."

The 74-page report addresses major themes including the contribution of science to policy-making and the importance of strengthening and sustaining science in the United States. It stresses the importance of making "stable and substantial federal funding for fundamental science a high priority" and advocates spreading research funds over a "broad spectrum of scientific disciplines, mathematics, and engineering."

Ehlers received high marks from Fermilab scientists who crowded the One West lecture hall to hear him speak. Many seemed amazed to encounter a congressman with Ehlers's grasp of the issues currently confronting U.S. research in basic science.

"He really gets it, doesn't he?" marveled one experimenter.

Mr. Ehlers U bent altijd van harte welkom in Fermilab.

That's Dutch for "Mr. Ehlers, y'all come back."

Deep CONCERNS

Ehlers Takes On Science Education

Accompanying Congressman Vern Ehlers on his visit to Fermilab was high-school physics teacher Michael Lach, son of Fermilab physicist Joe Lach. The younger Lach is spending a year as an Einstein Fellow on Ehlers's staff, in support of the congressman's project to address problems in K-12 science and mathematics education. The House Republican leadership has asked Ehlers to conduct a comprehensive survey of U.S. science education. He plans to introduce a bill in early 2000 that will offer recommendations for improving teacher recruitment, preparation, use of technology and professional development.

On November 8, Ehlers spoke on the House floor about the importance of science and math education. Excerpts from his remarks appear below:

"Mr. Speaker, I rise this evening to discuss the issue of education in mathematics and science in our Nation. I have deep concerns about the current status of math and science education in this Nation.... I believe currently it is inadequate. … The Third International Mathematics and Science Study…indicated that we were near the bottom of those nations and developed countries teaching mathematics and science in their high schools….

"… With the resources that this country has and with the high quality of students this Nation has, it is inexcusable for us to be near the bottom…. We should be not only at the top, but far and away the best Nation in this world in terms of our educational effort. I think we have to improve our math and science education… We have to make sure we have enough scientists and engineers in this country so that we can keep our economic growth strong and meet the needs of our citizens….

"It is going to get worse. I have made predictions on this floor that in 20 years, it will be impossible to find a good job without a good foundation in math and science… It is clear to me that I have to revise my estimate downward and say in 10 years people will not be able to get a really good job without a good grounding in mathematics, science, engineering, and technology…

Photo by Reidar Hahn

At the Lederman Science Center, Fermilab's Liz Quigg shows Congressman Ehlers and staffer Michael Lach the Detector Detail exhibit, one of several hands-on displays.

"How are we going to improve math and science education? …We have to make sure we recruit good teachers, because we are not recruiting enough today, we have to make sure they are trained properly, and we have to keep them. We have to make sure they do not get discouraged. We have to help them get the job done in the classroom.

"We have to improve our science curricula. … Recently the American Association for the Advancement of Science studied middle school curricula. Every middle school science curriculum in the United States was judged to be inadequate, every single one. The only one that was regarded as acceptable, and mildly acceptable, was one put out by Michigan State University….

"The final point is methodology. We have to improve…our methods of teaching science."

STATE of the LAB

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by Mike Perricone

Photo by Jenny Mullins

Director Michael Witherell: "Fermilab people and facilities represent an incalculably valuable asset to U.S. science."

When Director Michael Witherell began his presentation on the state of Fermilab at the close of 1999, he made sure the assembly of all hands knew this was not a summons to the principal's office.

"This meeting was not called to make an announcement," Witherell told the Ramsey Auditorium gathering, "and there is no crisis."

The last formal all-hands meetings in December 1998 were called for security briefings mandated by the Department of Energy. But in this series of four meetings from December 13 to December 16, 1999, Witherell set a new direction for business as usual: a direction emphasizing communication within the Laboratory, a direction set from the top and also suggested strongly by the results of an employee opinion survey giving Lab management low grades in communication (see "Survey Says…," pages 12-13).

"I often talk about Fermilab to outside groups, to people who fund us and review our work, and I thought it would be good to talk about these same things with our staff," said Witherell, who became the Lab's fourth director on July 1, 1999. "While I was going to make this presentation in any event, [the survey] added to the incentive for this discussion."

The meetings at Ramsey Auditorium set the stage for a new emphasis on communication within the Laboratory.

Exciting Science, World's Best Experiments, and Lots of Construction

The survey also produced notably strong responses regarding pride in the Laboratory, and job satisfaction, concomitant with top levels of scientific achievement.

"The research done here is exciting science," Witherell said, "and it competes well with that done in any field, anywhere in the world. Fermilab people and facilities represent an incalculably valuable asset to U.S. science. Thousands of physicists in the U.S. and abroad depend on the Lab to do their research. The Fermilab program is addressing the most important issues in our field, with experiments that are among the best in the world."

But communication is only self-congratulation if it sidesteps challenges, and Witherell did no sidestepping.

The Director openly discussed the challenges facing the Lab in gearing up for Collider Run II of the Tevatron in 2001. Run II, the Lab's highest priority, will be conducted in the shadow of the Large Hadron Collider in Europe, which is expected to be completed and operating within the next six years.

Unsurprisingly, the need for funding lies at the root of the Lab's biggest challenge, in balancing the needs of:

- two construction projects for Run II preparations;
- two construction projects for the LHC;
- two construction projects for neutrino research;
- participation in the non-accelerator construction project in Argentina for the Pierre Auger Observatory, the astrophysics experiment investigating high energy cosmic rays;
- researching the next generation of particle accelerators beyond the LHC.

"Although all are given high priority by the high energy physics community, we're under pressure to get these going as soon as possible," Witherell said. "Our funding does not match the total need, and that's the most difficult problem we face."

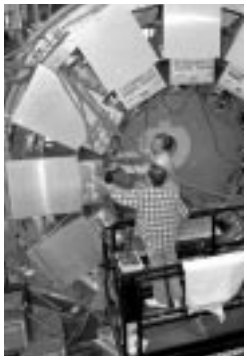
Under the charge of the Lab's Physics Advisory Committee, Run II holds the highest priority. Witherell said the Lab's strategy would focus on completing the Run II detector upgrade projects as quickly as possible, meaning some projects bearing on the Lab's long-term future might be delayed or postponed. He stressed that the Lab will suffer no long-term harm from this year's budget pinch.

Run II holds the potential for discoveries at the energy frontier that will change the direction of the field in the next six years, discoveries in the realm of the Higgs field and the postulated source of all particle mass.

Witherell underscored that potential with an eye-opening statistic: with present and future upgrades, the Tevatron will ultimately deliver 100 times the luminosity, or number of particle collisions, that produced the discovery of the top quark in 1995. Looking through the lens another way, the Tevatron has so far delivered up only one percent of the collisions it can produce.

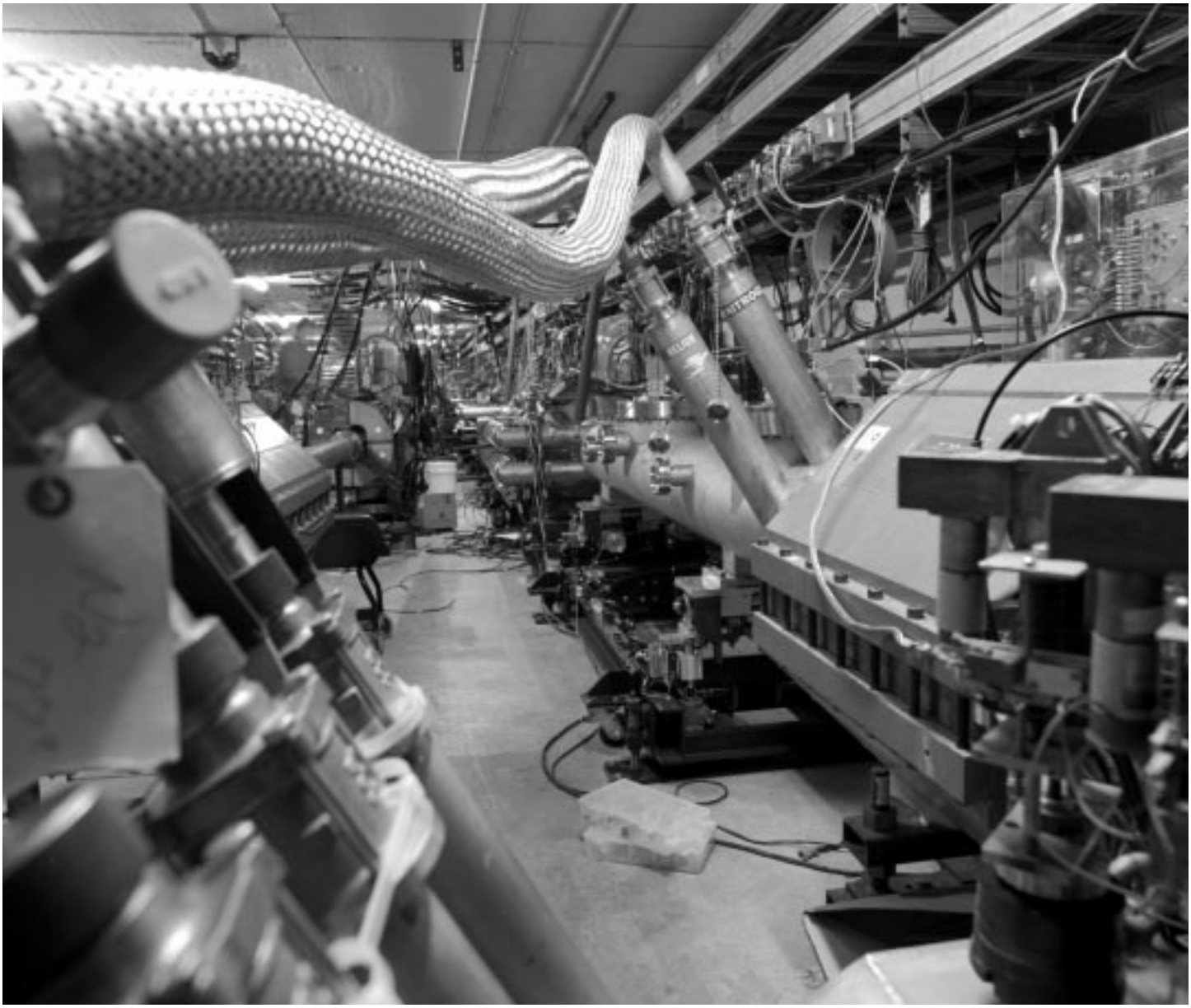
"The Tevatron will have a long period of running without interruption from the fixed-target program, and it should be the best period in the collider's history," the director predicted.

But first, the Run II construction needs to be completed. The 5,000-ton CDF and DZero detectors have had their electronics stripped out and are being rebuilt. Witherell pointed out that at $80 million each, including equipment plus operating funds, those upgrade projects are actually bigger than building most experiments in high-energy physics.



The Lab is focused on completing the detector upgrades to DZero (above) and CDF (below). Craig LeRette and Ron Olsen install wires in the CDF end plugs.

Photos by Reidar Hahn



Photos by Reidar Hahn

Antiproton Source upgrades are pivotal in increasing the luminosity, or number of collisions, for Run II of the Tevatron.

The collider detectors are now slated to roll into the collision halls in March 2001. They will join the accelerator complex that drives the Lab's research, and it's an accelerator complex that has not been simply marking time. In addition to completing the $260 million Main Injector-Antiproton Recycler project in 1999, the Lab has also performed significant upgrades on both the Tevatron, the world's highest-energy particle accelerator; and the Antiproton Source, key to increased luminosity in Collider Run II.

"We really have quite a new accelerator complex," Witherell emphasized. "Our main mission for the coming year is getting this very complicated set of accelerators working together, with high luminosity for the collider mode. That comprises most of the what the Lab will be doing."

With the high levels of activity, the Lab's safety record becomes all the more impressive. Witherell noted that over the last two years, the Lab has cut its "Lost Work Day Case Rate" by a factor of two.

"All 2,100 people at this Lab have integrated safety as part of their job," he said. "That's important in the way we work. But we also need a good safety record to clear away that issue, so we can concentrate on getting the research done."

As the largest U.S. high energy physics facility, and one of five large high energy physics facilities around the world (Europe's CERN being the largest), the Lab has a broadly-based research program:

STATE of the LAB F

- Accelerator-based experiments, including a Main Injector fixed-target program, will investigate Higgs mysteries and supersymmetry possibilities, and further the knowledge of CP violation marking behavioral differences between particles and antiparticles.
- Probing the intriguing question of neutrino mass, the Main Injector Oscillation Search (MINOS) and the on-site MiniBooNE (Booster neutrino) experiment are the keys in what Witherell described as "building the world's best neutrino program over the next two years."
- An additional detector will eventually join the MINOS detector site in Soudan, Minnesota, as part of the Cold Dark Matter Search.
- Astrophysics projects will search for the source of high-energy cosmic rays (Pierre Auger), and map the sky in an unprecedented scope (Sloan Digital Sky Survey).

Further, the Lab's production facilities are providing accelerator and detector components for the LHC, and the Lab will also serve as the U.S. host for an experiment at CERN that Witherell said will occupy "a central place in U.S. particle physics programs."

And whatever lies beyond LHC, whether the next-generation machine emerges as the Next Linear Collider, the Very Large Hadron Collider, or some combination of muon collider/storage ring/neutrino source, Witherell asserted Fermilab's leadership position.

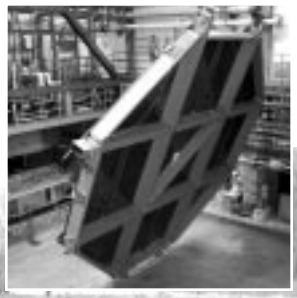
"Our goal is to build the next collider on the energy frontier here at Fermilab," he declared. "Unlike 15 years ago in this country, there is not yet a clear consensus in the field on what that facility will be. So we must play a leading role in research and development on accelerators for the future, to direct that future within the field."

The director left no doubt about the source for success.

"This Lab has a great past, a great present, and —I hope I've convinced you—a great future," Witherell concluded. "The primary resource we have in facing that future is the talent, the industry and the good will of the people at Fermilab."

A prototype MINOS detector wedge (right) is lowered into position at Fermilab's New Muon Lab…

…while MiniBooNE construction (below) forms another element of "the world's best neutrino program."



SURVEY

by Mike Perricone

Photo by Reidar Hahn

NIU professor Chris Parker (left) and graduate student Scott Young conducted an employee opinion survey at Fermilab.

High marks for job satisfaction, low marks for communication: an employee survey says Fermilab is doing well in some important areas but needs work in others.

"We can do better at communicating what we are doing, and at paying attention to the people who work here," said Fermilab Director Michael Witherell, discussing the results at the all-hands meetings of December 13-16.

"It is worth noting that these issues are common in large organizations," the director continued, "and not all problems can be resolved completely. At the same time, we can do better."

The employee opinion survey was conducted last June, after it was formulated by Chris Parker and Scott Young of Northern Illinois University. Nearly 1,000 of Fermilab's 2,100 employees completed the questionnaires, a response rate of 45 percent. The Lab Services Section coordinated the distribution and collection of the surveys at several locations throughout the site.

Witherell described some results as "remarkable."

"The statement, 'Overall, I am proud of this Laboratory,' received agreement by 80 percent of the people who work here," he said. "And 72 percent agreed that 'Overall, I am satisfied with my job.' Many organizations would give a lot to have their employees feel this way about the entire institution and about their role in it. I think this is the best message that came out of this survey. There's something that is very good about this Lab, and we want to make sure it stays that way."

Witherell said members of the Directorate had met with all the Lab's division and section heads to discuss the results, focusing on the lowest-rated items. They discussed which issues could be improved by specific action, which needed study to develop an appropriate response, and which did not yield a clear picture because of conflicting patterns of response.

"We also briefly discussed highest rated items, because we don't want to change things that we're doing well," Witherell said.

The most prominent problem area came in the category of "Procedural Justice." Employees were unclear about the processes and standards used in judging performance and determining salary, and felt they were unfair. Witherell said the Lab was already taking corrective steps.

"We are encouraging supervisors to do a better job of informing the people they supervise about how the salary and promotion process works," the director explained.

As part of the action plan, Director of Lab Services Kay Van Vreede is working with division and section heads to assemble focus groups in the six different job categories of the survey (administrative, computer science, engineers, scientists, technicians, crafts and skills).

"We need to ask more questions," Van Vreede said, "to learn their thoughts and their opinions on what some of the responses mean. We'll include that information in deciding the next steps we'll take."

SAYS...

Labwide Responses

Category	Favorable (%)	Neutral (%)	Unfavorable (%)
Autonomy (an individual's freedom, authority, and decision-making)	69	15	16
Challenge and variety (making use of an individual's skills, efforts and knowledge)	77	11	11
Job importance (an individual's contribution and significance within a work group and the Lab as a whole)	82	14	4
Role clarity (identifying responsibilities for an individual, supervisor and work group)	58	17	26
Role conflict (interference with an individual's work and responsibilities)	42	25	33
Role overload (too much work or pressure)	32	32	36
Work group cooperation (trust and cooperation in getting work done)	63	16	21
Work group pride (morale within the group)	41	31	28
Organizational warmth (atmosphere among employees and relations to management)	45	25	30
Supervisor trust and support (perceptions of openness, respect and recognition)	55	18	27
Supervisor goal emphasis and work facilitation (setting standards, offering help and direction)	52	26	23
Supervisor hierarchical influence (effectiveness as a link within the group and to upper management)	46	27	27
Procedural justice (clarity regarding salary, promotions and performance feedback)	35	27	38
Innovation (encouragement for an individual to try new ideas and methods)	43	30	27
Management concern and awareness (openness, communication and contact with individual employees)	28	25	47
Organizational support (attention to an individual's well-being, satisfaction and performance)	30	31	39
Accountability (Lab's appropriate response to meeting or not meeting expectations)	30	33	37
Communication (openness of information from management and around the Lab)	35	27	38
Overall satisfaction (with position, and with Laboratory)	72	7	20
Turnover intentions (readiness to seek another job)	64	11	25
Work group cohesiveness (relations within the group)	56	25	19
Commitment to the work group (individual's identification with the groups performance and success)	62	23	15
Satisfaction with co-workers (cooperation and cordiality among co-workers)	57	28	15

Dear Fermilab...

Hello.
I am a physics major at Colgate University in Hamilton, NY, and am working on a group project dealing with the geometry of paths through earth. Our professor would like us to connect the work we have done with geographic coordinates to the MINOS project that is being done at Fermilab. I was wondering if you wouldn't mind answering a few questions to assist me with my project:

1. Why was the Soudan mine chosen as the place for the receptor?
2. How do you make sure that the beam is pointed in the correct direction to hit the detector? What is the width/angle of the beam, and how much does the beam "spread out" en route? How much room for error is there?
3. Did you have to take irregularities in the surface of the earth into account?
4. Does the curvature of the earth affect the experiment or your planning of it at all?
5. How do you go about calculating how far beneath the surface of the earth the beamline is at any point, and does it matter to you just how deep in the ground it is?

I would greatly appreciate as quick a response as possible, since our project is due next week. Thanks in advance for taking the time to answer these questions. I hope they aren't too naive or unclear.

Jessica Frank

Dear Jessica....

I am very happy to respond to your perceptive questions about the MINOS experiment and its geodesic implications. I am a MINOS collaborator and a physics professor at Tufts University. I have been concerned with the beam-aiming problems for much of the past decade and will try to give you and your group some insight into the issues. You have obviously thought through many of the problems already so I'll try to be succinct — as succinct as a professor can be! — in reply.

1. Why Soudan?

(a) The distance from Fermilab—735 km—was appropriate to the physics requirements for oscillation studies at the neutrino energies available from Fermilab.

(b) A deep-mine environment is imperative to shield out most of the cosmic ray muon background.

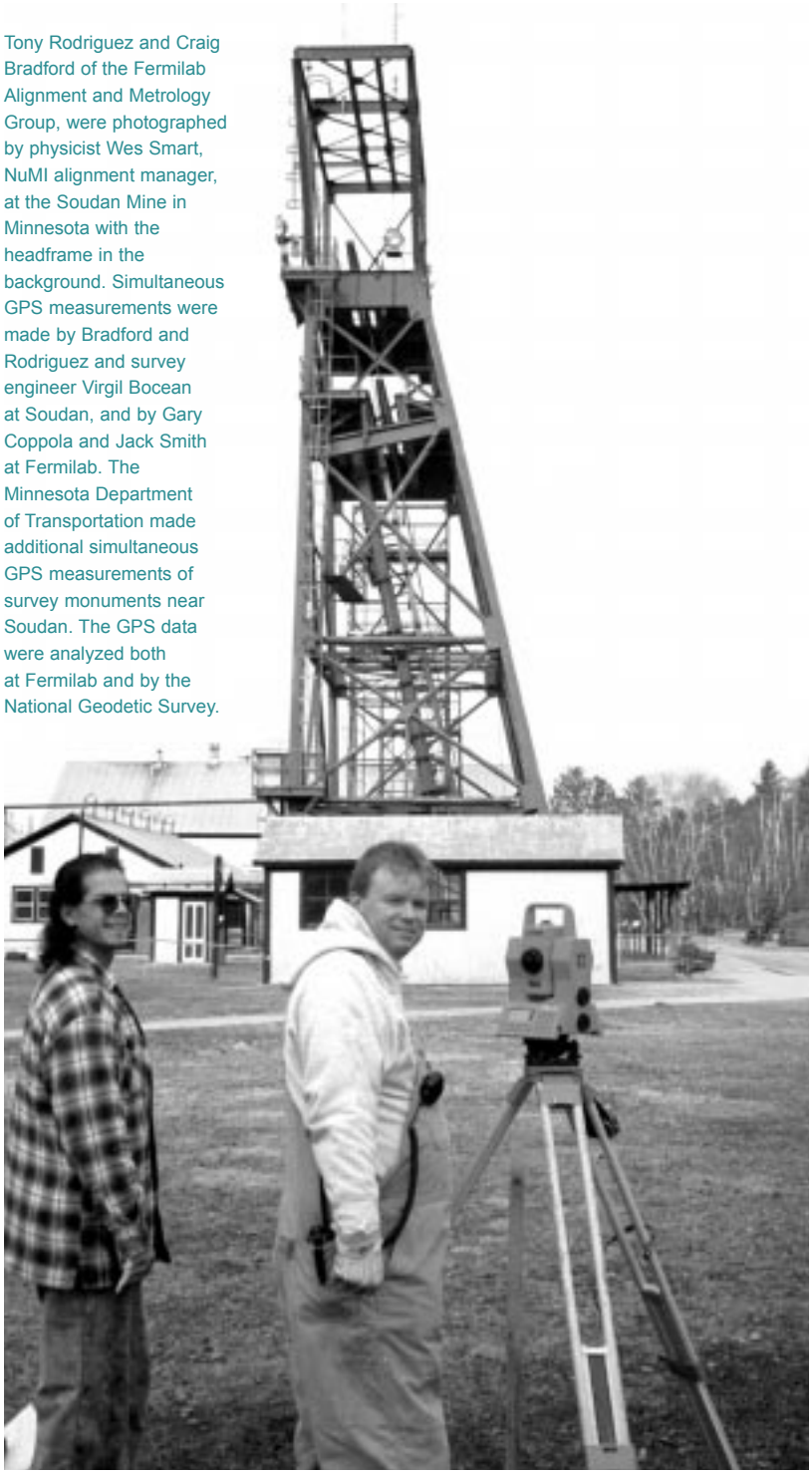
(c) Already present in the Soudan mine is a circa 1000-ton detector, SOUDAN-2, that has been operating for over a decade searching for nucleon decay and atmospheric neutrino phenomena. A "laboratory infrastructure" was present with a staff of proven capabilities— a significant cost factor.

(d) The SOUDAN-2 research collaboration was eager to participate in the much larger program of MINOS investigations; they were prime movers in the proposal.

(e) There was an intense technical competition among several proposals, including one with another mine—and MINOS survived!

2. Beam correctly pointed?

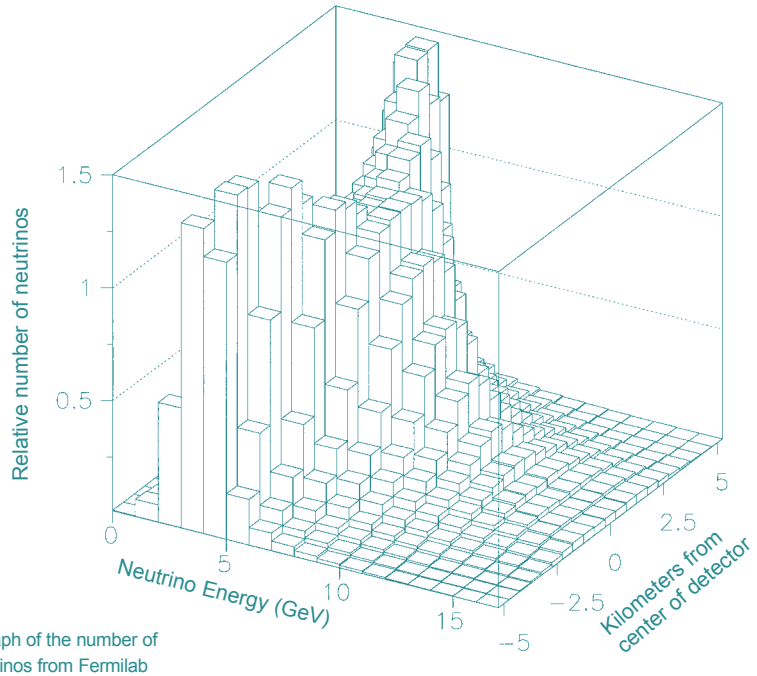
You ask a crucial question! The expected neutrino beam, if ideally focused by the complex magnetic lens system used to generate it, spreads out in a cone of half angle roughly 1 milliradian. At 735 km this corresponds to a "spot" of diameter roughly 1.5 km, or about a mile. Actually, this spot is not sharp-edged; the energy spectrum of the neutrino beam varies with radial position, the neutrinos near



Tony Rodriguez and Craig Bradford of the Fermilab Alignment and Metrology Group, were photographed by physicist Wes Smart, NuMI alignment manager, at the Soudan Mine in Minnesota with the headframe in the background. Simultaneous GPS measurements were made by Bradford and Rodriguez and survey engineer Virgil Bocean at Soudan, and by Gary Coppola and Jack Smith at Fermilab. The Minnesota Department of Transportation made additional simultaneous GPS measurements of survey monuments near Soudan. The GPS data were analyzed both at Fermilab and by the National Geodetic Survey.

Photo by Wes Smart

NuMI Beam at Soudan



A graph of the number of neutrinos from Fermilab reaching Soudan, as a function of neutrino energy and distance from the center of the detector. The highest energy neutrinos are focused at the center of the detector, but others spread out on either side.

the center being on average the highest in energy. Knowledge of the neutrino energy spectrum is critical to the MINOS oscillation studies, so it is required that the beam be aimed to be "on target" within 12 meters.This corresponds to an aiming precision at Fermilab of 15 microradians. Since the Fermilab neutrino "beam line" segment is in an underground tunnel a little under 1 km long, the aiming along this line must be to a precision of about 1.5 cm over that length. Control of the beam within this tunnel can be effected with monitoring detectors at the downstream end by moving beam magnetic lenses with fractional-millimeter precision; Obviously, the straight-line direction toward the Soudan mine cavern must be established to comparable precision!

The only adequate technique is exquisitely precise surveying, based upon modern GPS procedures to locate both Fermilab and Soudan Mine positions within few-centimeter accuracies in latitude, longitude, and altitude. The "altitude" is itself a complex matter since the earth is not exactly spherical, being flattened at the poles. (For that matter, it isn't precisely ellipsoidal, either!) The mathematics involved in calculating directions is thus basically spherical trigonometry, modified to accommodate the quasispheroidal "figure of the Earth." The discipline for doing all this, as you surely know already, is called geodesy.

The initial test of the quality of the surveying and the tunnel and beam-direction alignment will be in the actual detection of Fermilab neutrinos at Soudan, both in the MINOS detector and in the present Soudan-2 detector. However, simply seeing neutrinos will not say what part of the beam "spot" is hitting the detectors. This must be determined in order to know the neutrino energy spectrum. At present, the success of the MINOS experiment depends critically upon confidence that the basic geodesy, surveying and construction operations have been done correctly.

The real expert at Fermilab who, with his associates, is responsible for actually carrying out this beam-aiming program is Dr. Wesley Smart.

3. Irregularities in Earth's surface?

Insofar as the quasispheroidal shape of the earth is an "irregularity" the answer, as described in Item 2. above, is "yes." Local irregularities in the mass distribution near a field surveying station can also affect the direction of plumb bobs, and the critical "aiming" measurement at Fermilab will take such potential effects into account. Since the neutrino beam passes in a straight line underground over all of its trajectory to the mine, and since it is negligibly impeded by "earth" in any case, the surface irregularities have no effect on it.

4. Earth's curvature?

I think this issue is also covered in Item 2., above. Yes, the Earth's curvature must be accommodated in detail if one is to aim the beam correctly from Fermilab to Soudan.

5. How far down? Does it matter?

The proper geodesic calculations outlined in Item 2 also yield the depth of the beam at intermediate points. These depths can be approximately estimated by assuming a spherical Earth and working out the chord between the initial and final (lat, long, alt) points. So far as the neutrinos are concerned this depth is of negligible significance; it may be, perhaps, of some use politically to be able to reassure population centers that the "beam" (albeit almost totally non interactive) passes by at a comfortable distance underground. I am delighted that you and your group have undertaken your project! It is a subject of great importance to us MINOS folk, and I wish you every success with your report.

Sincerely,
Richard H. Milburn

LAB NOTE

Recreation Facility Advisory Committee

The Recreation Office is looking for volunteers to serve on a Recreation Facility Advisory Committee. This committee will act as a volunteer advisory committee to the Recreation Office in matters that identify needs, problems, and issues of the Recreation Facility, 16 Potowatomi. The committee may make recommendations for equipment purchases, building upgrades, facility policies, programs, leagues, and fees for the existing facility. The committee may also provide recommendations and solutions regarding problems and issues, for long-range plans, and future improvements. Membership for this committee will be through an application process and will require a one or two-year term. The committee will meet bi-monthly from September through April. Supervisor approval will be required. Committee applicants must be Recreation Facility members to participate.

If you are interested in participating on this committee, please complete the application form and mail to the Recreation Office, M.S. 126 no later than January 28. The forms can be found at the Recreation Facility or the Recreation Office. If you should have any further questions regarding this committee, contact Jean Guyer, x2548 or e-mail jeanm@fnal.gov.

MILESTONES

RETIRING

James Christenson, ID 8109, PPD DZero, on January 6.

Harold Delaney, ID 2545, FESS-Operations, on January 22.

DIED

Katie A. Mitchell, age 23, an on-call employee at Fermilab, daughter of Frederick (Beams Division) and Dottie Mitchell.

HONORED

David Nevin, Emil Huedem, Steve Krstulovich, Bob Huite and Randy Ortgiesen of Fermilab, and John Chapman of DOE Fermi Group, with the 1999 Department of Energy Management Award for "dedication to energy management and reducing energy costs," for their efforts in the Fermilab Central Cooling retrofit.

ELECTED

As Fellows of the American Physical Society, in November, 1999, Fermilab physicists David Neuffer, Joe Lykken, and Heidi Schellman.

Harry Weerts and John Womersley, as cospokesmen of DZero.

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

WEDNESDAY, JANUARY 19

Pork Loin with Red Currant Sauce

White Beans and Greens with Spiced Olive Oil

Lemon-Almond Cake

THURSDAY, JANUARY 20

Gnocchi with Spinach, Lemon and Garlic

Spiced Grilled Sea Bass

Fresh Mango Salsa

Barley, Corn, Red Pepper and Green Onion Pilaf

Butter Pecan Shortcake with Ice Cream, Pineapple and Bananas

WEDNESDAY, JANUARY 26

Mussaka

Marinated Olives, Tomatoes, Feta and Romaine

Baklava

THURSDAY, JANUARY 27

Chipotle-Lime Broth with Chicken and Pumpkin

Pork Tenderloin with Paprika Sauce

Egg Noodles with Caraway

Red Cabbage, Ginger and Balsamic Vinegar

Apple Danish Cake

FERMINEWS

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CLASSIFIEDS

FOR SALE:

■ ’99 Goldwing SE (Silver) 11K Miles. Runs great. Must sell. Will even store it for the winter. Asking $16,000 has Markland receiver hitch and (5 pin) OEM trailer wiring kit, Markland floorboards, foam grips and extra windshield. Also have 2 headsets for the intercom (one full-face helmet model, and one for either on a full-face or open-face). Still has 2 yrs on original warranty as of Nov 5 (unlimited mileage). Can get another 3 yrs extended (unlimited mileage). Call Terry X4572 or e-mail skweres@fnal.gov .

■ ’95 Mitsubishi Mirage 2dr coupe, 100k, red, automatic trans, AC, p/s, p/b, AM/FM, dual air bags. New: tires, battery, timing belt. Good condition. $2900 obo. Call Oleg Kurnaev X 4308 or (630)784-0048 or e-mail Kurnaev@fnal.gov.

■ ’91 Honda Civic DX, 3 door hatchback, AC, stereo, manual trans.,108k, well maintained, no rust or leaks, $2500 obo. Volker Sander, sander@mcs.anl.gov, (630) 985-1995 (h)(630) 252-7497 (w)Argonne National Laboratory Fax: (630) 252 - 5986.

■ ’90 Toyota Corolla Deluxe Wagon 5D, automatic, AC, power steering, cruise control, AM/FM stereo and cassette, 92k miles, new tires, new battery, new exhaust system. Runs very well. The car is in a very good condition due to regular maintenance. Small amount of rust. Kelley Blue Book retail value of more than $5000. Asking $4000 obo. For more information: mishra@fnal.gov x4094.

■ ’89 Dodge Colt, Red, 150k miles, moonroof, AM/FM Stereo, manual trans, new brake system, cellular phone included. $1590 contact Juan Pablo Fernandez x 8630, fernand@fnal.gov.

■ ’89 Ford Taurus 4Dr GL Sedan Sandalwood, 94k miles, auto, loaded, original owner, good condition, new brakes, $2,300, chou@fnal.gov or x5489.

■ ’87 Jeep Cherokee Laredo, navy, 6 cyl. 4.0 l, 4WD, auto transmission, tilt, AC, 2 dr, power locks & windows, AM/FM stereo/cassette, 165k miles, good condition, very little rust. $2800 obo. Marek x2373 or (630)983-8635, marek@fnal.gov.

■ ’86 Honda Accord, AC, etc., 128k miles, runs reliably, no rust, $1500 obo; 19” color TV, $100; changing table $40; vacuum cleaner $50; air filter $80; all less than a year old. Frank, x4828 or mail to: tecker@fnal.gov

■ 1″ x 60′ roll of new copper tubing... new $98 sell for $50 Dijak@fnal.gov or Ed x6300.

■ 21″ color TV Zenith with stand, cable ready. $30. Available Jan 28. May deliver to Femilab. Oleg Kurnaev, x 4308 or Kurnaev@fnal.gov.

■ 2 bedroom, 1-1/2 bath duplex for rent in the Woodland Hills subdivision in Batavia. Beautiful area, convenient to the Laboratory. Rent: $950 per month. No pets. Available February 1. Please call (630) 232-6006 Roger Dixon x2576.

CALENDAR

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

Art Series Presents:

ST. LOUIS BRASS QUINTET

Saturday, January 29, 2000, Ramsey Auditorium, Wilson Hall $16, 8:00 pm. “Diverse material combined with imaginative presentation marked the engaging concert” –*Kansas City Star*. The current personnel are all prominent musicians and educators.

LEO KOTTKE

Saturday, February 19, 2000, Ramsey Auditorium, Wilson Hall $17, 8:00 pm.

ONGOING

English Classes, Thursday at the Users’ Center, 10-11:30, free classes. NALWO coffee for newcomers & visitors every Thursday at the Users’ Center, 10:30-12, children welcome. In the auditorium, International folk dancing, Thursday, 7:30-10 p.m., call Mady, (630) 584-0825;

Barn Dance Jan. 9, from 7 to 10 p.m. in the Kuhn Village Barn. Music will be by Mike & Val, with calling by Paul Watkins. Afternoon Barn Dance Jan.16, from 2 to 5 p.m. in the Kuhn Village Barn. Music will be by thirteen-year-old Stephanie Coleman & Friends, with calling by Paul Ford. All dances are taught and people of all ages and experience levels are welcome. Admission is $5, children under 12 are free (12-18 $2). The dance is sponsored by the Fermilab Folk Club. For more information, contact Lynn Garren x2061 garren@fnal.gov or Dave Harding x2971 harding@fnal.gov, or see http://www.fnal.gov/orgs/folkclub/ Lynn Garren garren@fnal.gov x2061.

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