

The Village Courier



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FERMILAB'S 400 BEV ACCELERATOR

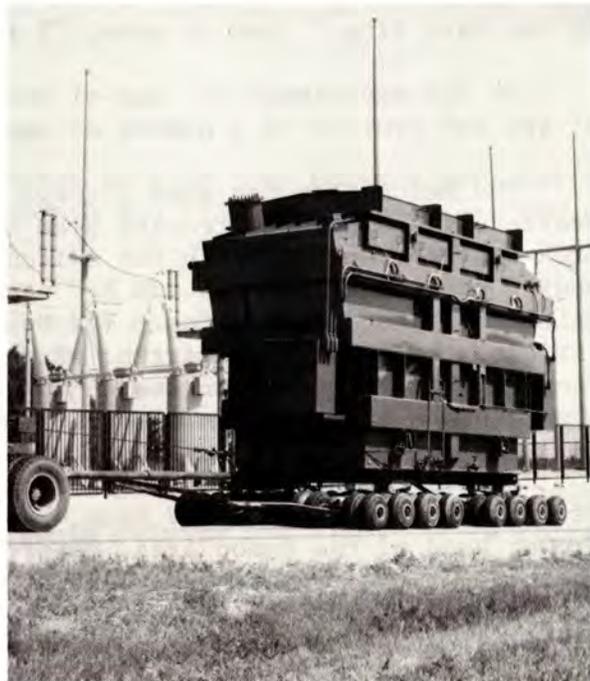
In less than 30 months, the Fermi National Accelerator Laboratory has doubled the operating energy of its accelerator system. Since the commissioning of the accelerator in March, 1972 (at the design energy of 200 billion electron volts) Fermilab's operating level has been rising dramatically. A 300 BeV energy level was adopted in January, 1973. Forays at 400 BeV were tried at three different times in the past two years to accumulate the data needed to prepare for the full-time operation that is now in effect.

Fermilab now provides a facility with more than five times the energy of the next largest accelerator in the world -- the 76 BeV machine at Serpukhov U.S.S.R. The United States has maintained leadership in accelerator energy for 23 of the last 30 years, with Soviet Union and European facilities competing for second place.

The effect of the new energy level is like that of raising the power of a microscope. It permits experimenters to examine in finer detail the characteristics of the sub-nuclear particles of the atom. Fermilab will also be able to offer a wide range of operating energies which is important to scientists as they study the effects that occur at each level of energy.

The final stage of preparation for the latest boost in energy at Fermilab began in June after the arrival of a new transformer for the Master Substation. The transformer increases the power available to the Main Ring and will permit operation at 500 BeV. The installation and commissioning of the transformer was completed on schedule and with no complications, according to Bill Riches of Plant Services. Ken Sceper, manager of plant utilities, Bob Wisen, and the maintenance electricians finished the installation in just three weeks after the transformer was delivered.

At the same time an additional feeder cable was added from the Master Substation to the main accelerator to permit the long interval (flat top) in the accelerating cycle that is so useful for



...New transformer arrived in June for 400 BeV operation...



...Aerial view of Fermilab Master Substation...

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400 BEV ACCELERATOR (Continued)

counter operation at 400 BeV.

During a shutdown in July, the Accelerator Division put the finishing touches on several improvements: Power supply modules were improved, and better ceramic water insulators were installed in Main Ring magnets. Cooling fans have been added to supplement the air cooling of water circulating through the Main Ring magnets. Eighteen R.F. stations now operate in the Main Ring. Monitoring of the operating status of Main Ring magnets has become systematic and effective so that since April 4 only two magnets have failed in operation.

Rae Stiening, the physicist who acts as watchdog over many of the Main Ring systems, sums up Main Ring progress, "There is no difference now between 300 and 400 BeV operation in the Main Ring." And he adds, "I think there'll be no difference at 500."

At the experimenters' end of the beam line, preparations for recording the interactions of 400 BeV protons in a number of experiments have kept pace with accelerator progress.

The Meson Area has gone through the largest transformation because the area was not previously equipped to receive beam of more than 300 BeV. Since last spring, the Meson Area has been working with the switchyard group to upgrade the left bending magnets and modify the target hall to 400 BeV capability. Another effort has been to upgrade the M2 diffracted proton beam line. The Meson Area now runs routinely with 400 BeV protons striking the production target. Experiment #357 on the M2 line has increased the mass range over which they can search for possible new particles. The increased energy should also enhance the spectrum of neutral hyperons available to Experiment #8.

Equally important for Meson Area experimenters is the increased number of particles produced by the new 400 BeV beam when it strikes the target on the Meson line. Chuck Brown, head of the Meson Area, reports, "One of the most powerful tools used by physicists when they try to construct a consistent picture of particle interactions is studying which properties of pion collisions vary as the energy is increased. The new energy range is an exciting development for Meson Area experimenters."

Experiments #21 and #254 on the Neutrino Experimental line wasted no time getting into the new action probing more deeply into the structure of the proton and the neutron. Gene Fisk suggests, "This may reveal new and exciting phenomena which will further our understanding of weak interaction physics. For example, the size of the proton seems to get larger when it is seen by increasingly-higher energy neutrinos. Over what energy region will this observation continue? The combination of the higher energy and higher intensity neutrino beams available at 400 BeV should help to answer such questions."

In the Proton Area, Jeff Weiss, a member of the Experiment #288 collaboration currently running in P-Central, comments, "We hope that the advantages of the higher energy will aid us in our search for high mass objects."

While it appears that Fermilab may easily slip into the routine of the operation at the higher energy, it is appropriate to stop and point out, "We've got a new machine!"

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DON'T MISS IT...

The Fermilab Canoe Race will be held Sunday, September 21, starting at 11:00 a.m. in the cooling ponds of the Main Ring. The course for the race runs clockwise from the F-4 sector. The race is open to Fermilab employees, visiting experimenters, contractor employees, and to members of their families over 14 years of age.

Spectators may reach the viewing area by going through the Cross Gallery and crossing the berm at the Transfer Hall stile.

Last minute entries will be considered. Contact Larry Allen, Ext. 3721, or Jane Theis, Ext. 3560. They also know where canoes can be rented.

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NEW APPOINTMENT AT FERMILAB

John McCook, Associate Director for Administration, has announced the appointment of Jim Filiung to the newly-created position of Deputy Department Head for Architectural Services. In this capacity he will recommend operational policies and assist with administrative direction over all phases of work carried on by the Architectural Services Department. A licensed architect and structural engineer, Jim has been with Fermilab since July, 1974. He received his bachelor and master's degrees at the University of Illinois. Jim and his family live in Lisle.



...Jim Filiung...

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VOLUNTEERS NEEDED FOR SOLAR ENERGY PROJECT

Fermilab's Solar Energy club is looking for volunteer help as they enter a very exciting period of construction. People are needed to work evenings and Saturdays completing the collector panels and other elements of the solar energy system that will heat a house in the Fermilab Village this fall.

John O'Meara, club president, reports that a new design has been developed for the collector panels that has resulted in a major breakthrough in cost for the Fermilab project. Unfilled tubing manufactured for fluorescent lights can be substituted for the two layers of plate glass previously called for, the club has found. The tubing will be used on all six collector panels in the Fermilab system...If the club can muster enough help to get a production line rolling.

Call John O'Meara, Ext. 3393, if you are interested in helping the club. It is believed that the Fermilab project is the only functioning system in the Upper Midwest, although there is a great deal of interest in solar heating and many prototypes have been suggested.

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...Estudiantina Real Del Potosi visited Fermilab Tuesday, September 16, and performed their native music style for the Laboratory's noon hour audience in the cafeteria. The young students, who come from San Luis Potosi, Mexico, are completing a tour of the United States. They performed in the Fermilab area in celebration of Mexican Independence Day...

...Jesse Guerra and Ernie Ramirez of the Proton Department, Sherry Nila and Saul Cepeda of Support Services, Roy Rodriguez, EEO, Guadalupe Trevino, and Mercedes Britton of Research Services, were the visitors' hosts during their brief visit to Fermilab...

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NALREC HOE DOWN
Saturday, September 27
7:30 p.m. - midnight

Music by Angie and the Band Aids
and their skits and wits

Dannie Griffin, Caller

Pizza, cider, cash bar
No charge

DON'T FORGET...Happy Hour - Thursday, September 18 - 5-7 p.m. in the Village Barn.....Folk Dancing meets Friday night, September 19, Village Barn, 8 p.m. Everyone welcome, instruction provided.

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COOPERATIVE PLAYGROUP MEETING ANNOUNCED

The Cooperative Playgroup's next meeting will be held September 23 at 7:30 p.m. in the second floor lounge of the Central Laboratory. Anyone with children between 18 months and school age is welcome to join the group. Questions can be answered at the meeting or by calling Ellen Taylor, 584-5284.

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PLEASE NOTE:

The evening food service in the Fermilab Cafeteria, Monday through Friday, will offer a complete food line from 5:00 to 6:30 p.m. and a partial food line until 7:30 p.m.

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FREE AMATEUR RADIO CLASSES

The Wheaton Community Amateur Radio Club will hold free amateur radio classes for beginners starting Saturday, October 4th, 9 a.m. at the DuPage County Civil Defense Center in Wheaton. All books are supplied free. Further information can be obtained by calling Greg Chartrand, Ext. 3140 or 858-7388.

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CLASSIFIED ADS

FOR SALE - 1972 Maverick, 6 cyl., auto., P/S, rebuilt trans. 3 mo., new shocks, new exhaust system, A/C, radio, heater, white walls, \$995. Otis Whitby, Ext. 3555 or 629-8612.

FOR SALE - 1972 Yamaha 125 Enduro, street or trail, w/Hooker header & extra accessories. Make offer. 355-2272 or Jack Upton, Ext. 3996.

FOR SALE - Lemon and grapefruit seedlings, \$1 & \$2. Large Swedish ivy, \$40. Rene Donaldson, Ext. 3278.

BEER CAN COLLECTORS - Liquidating collection. Will sell individually. Call Robert Donaldson, 393-2163 after 6 p.m.

FOR RENT - By wk. or mo. 2 bedroom home comp. furn., A/C on Pine Island, Fla., near Ft. Meyers. Restful, best fishing. Fall & Winter openings. Call A. Streccius, X3580, 584-0712.

FOR SALE - Honda 350 cc. Motorcycle, low mi., crash bar, sissy bar, hi way peg, real clean, \$500. Call V. West, Ext. 3141 or 896-6419.

FOR SALE - Round 12'x3' pool w/filter & all parts. Used 2 seasons, \$20. J. Stoffel, X3157.

FOR SALE '71 VW Super Beetle, exc. cond., stick shift., AM-FM radio, rear window defrost, A/C, low mi., 4 extra tires, 2 snows, 2 reg., \$1675., R. Schmidt, 851-0378 after 6 p.m.

FOR SALE - Batavia, 4 bedroom, 2½ baths, d.r., brick fireplace, central air, carpeting, family room, wooded lot. Immediate Possession, Call Hill, 879-8234.

FOR SALE - 1973 Super Beetle, exc. cond., 4 spd., \$1900. C. Johnson, Ext. 3414, 3494.