The Village Crier

national accelerator laboratory

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PROGRESS REPORT

The main accelerator achieved successful operation at 400 BeV on December 14, 1972 at 2:46 a.m. Data at 400 BeV was collected in the Internal Target Section by Experiments 36,63, and 67, beginning at 6:15 a.m. on December 15, 1972.

The Booster Accelerator operated at its design rate of 13 successive pulses Wednesday, December 13, 1972. Installation of the ceramic blocking capacitors in the Booster is now complete.

The world's highest energy proton accelerator now operates at twice the energy it reached just nine months ago. About 15 staff members followed the progress of the operation through the evening and early morning hours of December 13 and 14. The suspense and drama of observing the machine reach for the first time into regions never before attained by men, continues to intrigue those who follow NAL progress. The 400 BeV operation continued until 5 a.m. on December 14.

Operation of the accelerator at this energy was made possible after a period of extending the capacities of some component systems and commissioning additional components. Perhaps the most important contribution of sophisticated industrial technology to the accelerator was the development of new high power SCRs while the power supply was being designed. These made it possible to build power supplies capable of operating at currents sufficient to go to 400 BeV for about the cost originally estimated for 200 BeV. The hope is that energies as high as 500 BeV may be eventually reached with the accelerator.

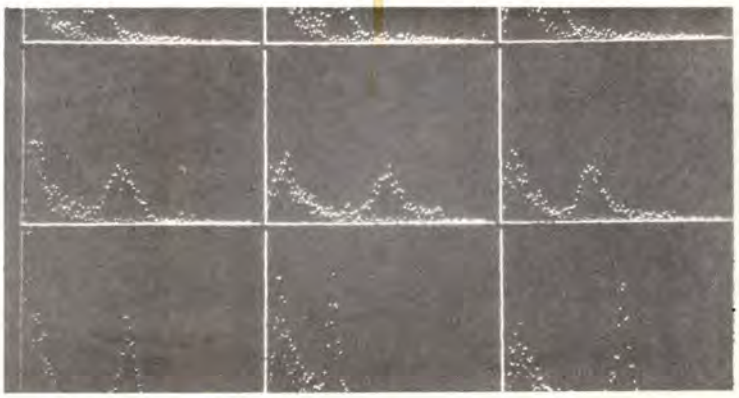
The 400 BeV operation was resumed early on the morning of December 15 in order to carry out experiments with the Internal Target. Experiments 36, 63, and 67 all collected 400 BeV data. The Internal Target Section became the first experimental area to record data at 400 BeV.

Looking back, as 1972 comes to an end, at the accomplishments at the National Accelerator Laboratory in the past twelve months, reveals a remarkable saga of achievement. Many different combinations of efforts during this time, involving all personnel of the Laboratory, have brought one success after another, always with quiet underlying dedication to producing the best machine of its kind in the world.

On January 22, 1972, 20 BeV acceleration was reached for the first time, successfully

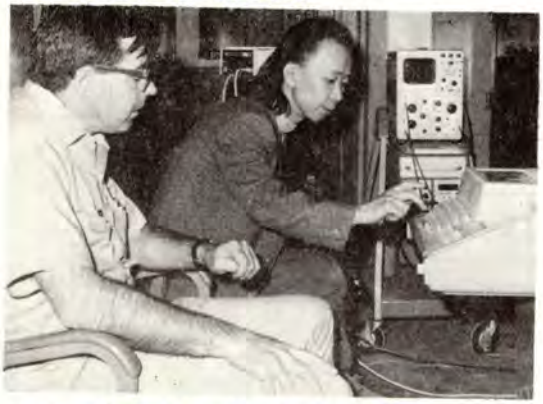
(Continued on Page 2)

...Victory toast to 200 BeV on March 1, 1972 heralded one of many major achievements at NAL during the year...



...Detectors of Experiment 36, in the Internal Target Section, recorded proton-proton elastic scatterings at 400 BeV...

...1972 AT NAL...



...Tuning the Neutrino Lines...

...Collaboration in C-Zero...

...Installing giant superconducting magnet...

...400 BeV energy in December...

taking the machine over the 17.4 BeV transition energy.

During February, acceleration climbed from 26 BeV on February 3, to 53 BeV on the 4th, 100 on the 11th, reaching design energy at 200 BeV on March 1. During this critical month, the tremendous efforts of the power supply group played a very important part.

Experiment #36, in the Internal Target Section of the Main Ring, on March 6 became the first experiment to take data from the NAL machine. International collaboration at NAL began with the arrival of seven visiting experimenters from the U.S.S.R. on March 4.

In April, extraction of the beam to the experimental areas began. Beam reached the Neutrino Target Hall for the first time on April 21. Four weeks later, on May 29, beam was detected in the 30-inch Bubble Chamber, completing the delicate tuning of the equipment on the two miles of the Neutrino line.

During June, experiments in the 30-inch Bubble Chamber and in the Internal Target Section collected data as the accelerator operated routinely at 200 BeV.

In July, protons were accelerated to 300 BeV and the monthly report stated, "every indication is that there will be no great difficulty to operating at that level."

In August, those 300 BeV protons gave 16,000 pictures to Experiment 37A in the 30-inch Bubble Chamber. Experiments 2-I and 154 also recorded data from the same 300 BeV run.

September brought many visitors to NAL for the XVI International Conference on High Energy Physics. The auditorium and Central Laboratory Building, though unfinished, were pressed into service to accommodate the meeting.

The Meson experimental area came on the air on September 6; the Proton Area on September 20. The Meson Area completed nine emulsion experiments in four days. In all of the experimental line work, the Switchyard group's work was vital, always demonstrating the desire to do the job well and then, better than before. By November 3, these men had activated all three experimental lines.

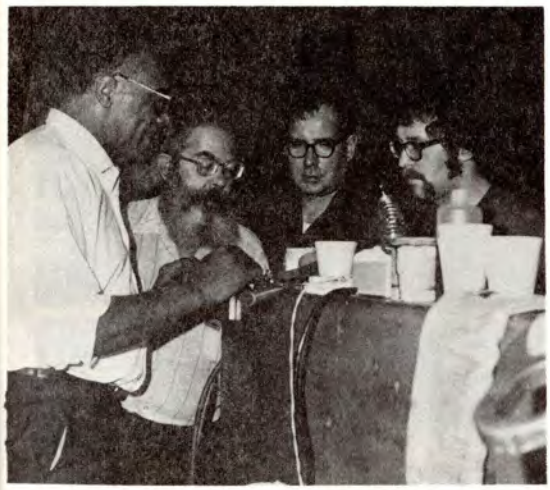
Meanwhile, the Accelerator Section pushed the intensity of the beam upward; by November 26, 10^{12}--one trillion protons were circulating in each pulse of the Main Ring. Experimenters in Experiment 21 on the Neutrino line were delighted to see all those protons come charging into their detecting equipment, giving the first recorded neutrino events at the Laboratory.

There was no let up in the pace during December. The 300 BeV operation came again quite easily on December 8, and a few days later, the accelerator operators reached upward again. NAL has now operated a 400 BeV machine!

The direction for 1973 in NAL efforts will no doubt be directed toward experimental areas. But in 1972 the men and women who built and operated the NAL machine have had a year of triumph!!!

* * * * *

...The closing weeks of 1972 find efforts of everyone on the NAL site contributing in some way to the successes achieved during the year. Photographer Tim Fielding recently visited a few of the people who work here...



...At Plant Services: Florence Foley, G. Plant, (L) and V. Sutcliff...

(Top)...In the Magnet Assembly Area: (L-R) H. Van Leesten, R. Condon, K. Fleischer, Cecil Barnes...(Bottom) L-R: Research Services' N. Erikson, M. Otavka, J. Peifer, and G. Smith...

(Top)...In the Hi Rise Machine Shop (L-R): H. Monaco, W. Ewer, A. Albano, and C. Ohrn...(Bottom) Cafeteria Hostesses (L-R): Ann Anderson, Bev Warren, Mae Riggs, and Sandy Roubideaux...

...K.C. Cahill, Accelerator Section...

...A.E.C. Personnel (L-R): Amelia Bocanegra, Dorothy Jackson, Fred Mattmueller (Area Manager), Marilyn Bailey, Loretta Miller, and Minerva Sanders...

...Magnet Fabrication by (L-R): L. Klein, J. Arko, W. Hanson...

...DUSAF engineer R. Pages (L) and John Hackemer...






...The December 10th Christmas Party brought many many of the ten-and-under set to the Village Barn for a gift and visit with Santa. Maggie the Clown's balloons and snacks rounded out an afternoon of holiday fun for the little ones...

* * * * *

The cafeteria in the Central Laboratory building will be open from 5:00 p.m. to 1:00 a.m. starting on Tuesday, January 2, 1973, Monday through Friday, on a trial basis.

Soon, the cafeteria in the Central Laboratory building plans to be open on Saturday and Sunday, from approximately 8:00 a.m. to 2:00 p.m., and from 5:00 p.m. to 1:00 a.m., also on a trial basis.

Menus will be determined by demand and volume, in both cases.

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Holiday greetings to all employees and their families, and to all friends and associates of the National Accelerator Laboratory.

CLASSIFIED ADS *(There will be no issue of the Village Crier, Thursday, December 28, 1972.)*

FOR SALE - Movie Camera, 1 yr. old, excel. cond., 3.5 zoom lens, 2 shutter speeds, movie light, super 8, ½ price-$70. Call Dottie Alderton, Ext. 3771 or 231-6119

* * * * *

...Special thanks to NAL Photographers,

Tony Frelo

Tim Fielding

for their help in '72

The Village Crier is published by the Public Information Office of the National Accelerator Laboratory. Margaret M.E. Pearson, Editor. Correspondence may be directed to the address below. Telephone number of the Laboratory is 312 840-3000

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