The Village Crier

national accelerator laboratory

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PROGRESS REPORT - APRIL 17 THROUGH APRIL 22, 1972

An 80 BeV beam was extracted from the Main Ring and was detected in the Neutrino Target Hall at 9:50 p.m. on Friday, April 21. The accelerator was set on a 200 BeV ramp on Saturday, April 22, and extraction studies will continue.

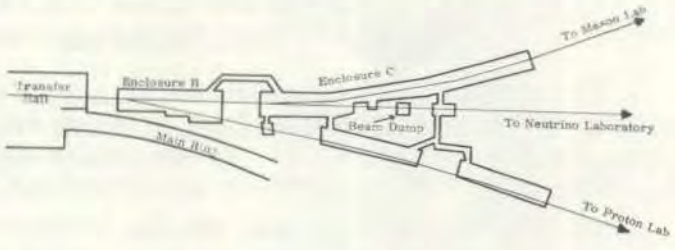
NAL BEAM HEADED TOWARD EXPERIMENTAL AREAS

With accelerated beam now circulating in the NAL Main Ring, the spotlight has turned to the Switchyard section. It is this group's equipment that will, so to speak, reach out and gently but firmly grab the proton beam as it flies around the Ring 50,000 times per second and will then send it to the experimental targets where the protons interact with target material.

Following achievement of 200 BeV acceleration in the Main Ring on March 1, efforts immediately turned to extracting the beam from the Main Ring and guiding it to the experimental areas. On March 6th, about 5% of the circulating beam was extracted. On March 10, a beam spot was located further down in the Transfer Hall; on April 14, a beam of 3×10^9 protons was detected in Enclosure B. Then, on April 16, beam was obtained still farther down the line in the Beam Dump opposite the Meson line switch at Enclosure C. Finally, on Friday, April 21, a beam of 1×10^{10} protons was detected in the New Hall of the Neutrino Laboratory, some 3,200 feet from the Transfer Hall. The next step is to direct beam to the 30" Bubble Chamber located beyond the end of the Neutrino Laboratory area, approximately two miles from the Transfer Hall.

When full machine intensity is reached, efficiency of extraction must be greater than 99% in order to avoid the radioactivity that would result from beam lost at the extraction point. Extraction begins in an electrostatic septum 100 feet upstream of a long straight section of the Main Ring that also contains the injection system for the 8 BeV beam from the Booster into the Main Ring. The 20 ft. septum consists mainly of tungsten wires spaced .040 inches apart, resembling a thousand piano strings. The septum device is the most delicate element of the extraction system. It must provide enough bending to allow the beam it grasps to clear the Main Ring components at the straight section; the septum's field cannot affect the Main Ring during acceleration, and it must be thin enough so that it does not intercept any significant fraction of the beam. The electrostatic septum deflects the beam horizontally outward from the Main Ring. After drifting about 100 feet, it enters a Lambertson septum magnet which bends the beam downward. A series of specially-designed magnets, designated as "C" and "H" magnets, then guide the beam to a pipe in the tunnel wall that leads to the Switchyard. Beam transport from then on is much the same as in the Main Ring -- by means of a series

...The electrostatic septum which pulls the proton beam out of the Main Ring so that it can be directed to experimental areas...



...Schematic of NAL Beam Switchyard. Beam travels from left to right...

Photo by Tim Fielding, NAL

(Continued on Page 2)

NAL BEAM FOR EXPER.AREAS (Cont.from P.1)

of dipoles and quadrupoles that send the beam to the desired experimental area.

The NAL extraction system was originally designed for "slow" extraction. In order to simplify the adjustments needed to bring the beam through the system for the first time, it was decided to provide for "fast extraction" at the present time. Fast extraction is also useful for bubble chamber experiments such as those which will occur shortly in NAL's 30" bubble chamber. Slow extraction will require additional work on the system and is needed for many experiments whose detectors would be swamped by high intensities under fast spill conditions.

During the recent accelerator shut-down period, the Switchyard Section incorporated a number of changes necessary to initiate the fast extraction. One-meter dipoles originally bumped the beam slowly into the wires of the electrostatic septum. While this technique can be fairly efficient for extraction (maybe 80%), it requires that the bumped beam be very parallel to the carefully-aligned wires.

According to physicist Richard Mobley, "It was decided to install a 'super-pinger' to give the circulating bunch of protons a .8 inch displacement at the electrostatic septum in a single Main Ring turn. The coils of the pinger are timed to reach their peak just as the 1.5 microsecond Main Ring bunch passes through them."

Mobley also reports, "A further refinement was the installation of another dipole bump system, placed to control the angle of the bumped beam at the electrostatic septum. Scintillator flags, ferrite core intensity monitors, and segmented wire ion chamber were also installed for beam detection."

1st Row: R. Andrews, L. Bartelson, R. Biwer, E. Bleser
2nd Row: R. Currier, R. Daniels, H. Edwards, J. Grimson
3rd Row: A. Guthke, F. Hornstra, R. Krull, J. McCarthy
4th Row: R. McCracken, R.Mobley, R. Nissen, R. Oberholtzer
5th Row: L. Oleksiuk, J. Otavka, C. Rode, J. Sauer
6th Row: R. Scherr, G. Simon, K. Sowinski, H. Stredde
7th Row: E. Tilles 8th Row: A. Visser

The present Switchyard Section was evolved out of the former Beam Transfer Section that was headed by Al Maschke. Ed Bleser has headed Switchyard commissioning. Group organization is defined by the nature of the elements of the system. For example, Richard Andrews, Dick Krull and Butch Bianci have been associated with the electrostatic septum; Claus Rode and Bob McCracken worked on the magnetic channel. Aage Visser was responsible for power supplies. Rode also has developed controls with Ken Sowinski, Jack McCarthy and Leon Bartelson. McCarthy and Bob Oberholtzer produced the pinger.

The design and installation of the Transport system has been under Dick Mobley, Ron Currier and Al Guthke while John Grimson has been responsible for the Beam dump. Rudy Nissen and Al Guthke developed the vacuum system while Dick Biwer, Les Oleksiuk, Fred Hornstra and Jon Sauer gave their attention to detectors. Helen Edwards helped with the tuning.

In addition to Maschke, design of the Switchyard system has been the work of Les Oleksiuk Dick Mobley, Bob Daniels, Claus Rode, John Simon and Herman Stredde. Bob Scherr, Ed Tilles, and Joe Otavka supervised construction of the many specially-designed magnets and control equipment needed for this highly-complicated system. Bill Vallas of DUSAF was the architect. The group, numbering 70 in peak periods, also included many other technicians and design personnel. They will shortly "deliver" the proton beam that experimenters have been waiting for.

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FRED C. MATTMUELLER NOMINATED FOR FEDERAL EMPLOYEE OF THE YEAR AWARD

...Fred C. Mattmueller...

Fred C. Mattmueller, Deputy Area Manager of the Atomic Energy Commission's Batavia Area Office, Batavia, Illinois, has been nominated for honors in the Sixteenth Annual Federal Employee of the Year Awards Program for the Chicago Metropolitan Area. Mr. Mattmueller, who resides at 1021 Heatherton Drive, Naperville, has been selected as one of the five finalists in the Outstanding Supervisory Employee category.

The competition, comprised of four categories, (Outstanding Professional Employee, Outstanding Supervisory Employee, Outstanding Federal Employee and Suggester of the Year) is open to outstanding employees from some 200 offices of the U. S. Government agencies in the Chicago area. Final awards will be presented at a luncheon on May 24, in the International Ballroom at the Conrad Hilton Hotel, Chicago.

Mr. Mattmueller joined the AEC in 1953 as a staff member in the Budget Division of the Chicago Operations Office. He previously had served as Deputy Director of the Budget Division before becoming Director of Contracts Division in 1961, and had extensive experience in administrative matters with other Federal agencies before joining the Commission. He served in the U. S. Navy from March 1944 to June 1946. In 1949, he received a B.S. degree in Accounting from DePaul University. In addition he participated in career oriented courses offered by the Civil Service Commission, Federal Executives Institute, Brookings Institute and Geo. Washington Univ.

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CHANGE IN SAFETY GLASSES PROGRAM

Last August an experimental program started at NAL utilizing a mobile unit for eye examinations to facilitate the distribution of safety glasses to NAL employees. Since that time over 350 prescription eye glasses have been distributed, in spite of some difficulties in scheduling examinations and delays in delivery. At this time there is not a significant backlog of examinations and it has been decided to discontinue the mobiloptic van visits to NAL.

The safety glass program will continue. Preliminary screening will be done in the Medical Office at 24 Sauk. Employees who require prescription safety glasses will be directed to their own optician for completion of the prescription. The glasses will be ordered through the Laboratory. For further information, please call Mrs. Dorothy Poll in the Medical Office, Ext. 232.

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NAL SPORTSMEN CLAIM TROPHIES...

Left...In a final exciting match with Clarence Bowling ,Technical Services,(L), on Thursday, April 13, Jim Walker, Physics Department, captured the NAL Ping Pong championship for the second time. David Scafe, Technical Services, played Bowling in the semi-finals. Elbert Smith, Radiation Physics, was chairman of the event.

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Right...Chuck Johnson, NAL Site Patrol Officer, placed 3rd in the nation in the black belt division at the Isshinroiu (Okinawan) karate tournament April 9, against 100 black belt competitors. He began karate in 1965, practices 3-6 hours each week. "It's a combination of balance, flexibility, strength," he says.

Photos by Tim Fielding, NAL

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(continued on Page 2)

NAL TO OBSERVE ARBOR DAY

NAL employees will observe the 100th anniversary of Arbor Day on Friday, April 28th. More than 200 plants and shrubs will be available for planting. Included will be various species of evergreen shrubs; flowering shrubs, such as dogwood and crabapple, and oak.

Visitors and employees interested in participating in the occasion should assemble near the Village Barn at 12:00 noon. Bring your own shovel. Refreshments will be served.

GARDEN PLOTS AVAILABLE

NAL employees, users, and visiting families who want a garden plot should call Phyllis Thompson, Ext. 303, to make reservations. Serious gardeners must request their previous plots by April 27 by calling Anne Burwell, Ext. 291.

There are 128 (20'x40') plots, located behind the Model Shop on Shabbona. The ground will be plowed and worked down. Bob Hines, NAL Farm Manager, suggests that gardeners be sure ground temperature is at least 60° before planting seeds. The cold, wet spring weather has caused planting conditions to be somewhat uncertain.

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GOOD LUCK...to Frank Cesarano, Material Management, who left his job at NAL on Friday, April 21, for duty with the U.S. Air Force.

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REPORT ON DONATIONS FOR HARRY MCQUINN FAMILY

Employees in the NAL Industrial Buildings send their thanks to all who responded to their call for help for Harry McQuinn whose 3-year old son was killed in a fire last week. Many offers of clothing and household goods were received and $308 in cash was collected. Those who still wish to help may want to consider a cash donation which may be sent to LaDaune Koempel, Industrial Building #1, Ext. 555.

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NOTES FROM PERSONNEL DEPARTMENT

Ping pong tables have been set up in the Anderson Barn. Paddles and balls may be obtained from Personnel, 21 Sauk. Also available at 21 Sauk is a demagnetizing machine. Employees may restore magnetized watches in a few minutes' time with this device.

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MEN'S MORNING EXERCISE CLASS...NAL men are invited to join group on Monday, Wednesday and Friday at 7:15 a.m. in the Village Barn Men's locker.

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CLASSIFIED ADS (Due to space limitations, ads shortened so all could be included.)

SOFTBALL SEASON IS HERE. All ladies interested contact Sherry Nila, Ext. 585.

FOR SALE - '67 Suzuki Scrambler, 250 CC 6-speed Trans. $300. J. Larson, Ext. 461.
FOR SALE - '66 Pontiac GTO, 4 sp.,new tires,mufflers,starter. $650. F.Walsh,Ext.470or 231-7567.
FOR SALE - '69 Toyota Corona, 4 dr.auto,AC,Stereo, $1,300. J. Middleton,X-555 or 815-786-2894.
FOR SALE - '71 Honda,350 Scrambler,$650.R.Jackson 898-4066.
FOR SALE - Toyota Mark II Wagon,$2,475.B.McCaw, Ext. 279.
FOR SALE - '61 VW w/gas heater, $200. Fred, 357-0768.
FOR SALE - Life jackets,adults $3; Childrens $1.50 and $2. H. Barber, Ext. 392.
FOR SALE - Tricycle $5;Childs stove & refrig. $8. Call 969-0269 after 5:30.
FOR SALE - Realist 400 slide proj.& trays.$35.Falk, Ext.734
HOME TO SHARE-w/working girl June 1. Shirley, Ext. 402.
APT.FOR RENT- 1 BR,near Winfield. $175 mo. 231-5128.
GIVE AWAY - ½ Lab.&Gldn.Retr.Puppies,Diane at switchboard.
GIVE AWAY - Double Bed before Apr.30. P.Gollon, Ext.461.
FOR SALE - New dining table w/6 chairs,$60.Couch $30. Call Dao, Ext.595.

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