


The Village Enterprise

 national accelerator laboratory

Operated by Universities Research Association Inc.
Under Contract with the United States Atomic Energy Commission

Vol. 4 No. 36

November 2, 1972

BOOSTER MULTIPLE PULSE UNDERWAY

The one-each-second pulse beat of the NAL Booster Accelerator has taken on a snappy new rhythm. Now it's six beats instead of one; shortly, the count will go to thirteen, and the stepped-up pace will bring the machine and the Booster staff into a new phase of operation.

Since May of 1971, the Booster accelerator has operated both as a self-contained synchrotron and in recent months as the injector for the Main Ring. It has been a learning period for both machine and staff, and operating experience has yielded a good deal of information on how to improve performance. This new phase signals the beginning of a refinement period that will see the Booster and other NAL systems improved to give maximum performance.

The Booster accelerator is the middle step in accelerating the proton beam; it lies between the linear accelerator and the Main Ring. It "boosts" the energy of the beam by accelerating the 200 MeV protons it receives from the linac in 16,000 fast turns so that the beam reaches 8 billion electron volts within .033 seconds. The fast action is necessary to keep to a minimum the time required to fill the Main Ring. Because the Main Ring is $13\frac{1}{4}$ times the size of the Booster, four miles in circumference compared to the Booster's 1,555 feet, it takes many pulses of the small accelerator to fill the large ring. Until now, without the full multipulse capability for the Booster system, operation was carried on with one Booster pulse for each Main Ring pulse. This meant that the Main Ring received only 1/13 of the protons it needed for maximum performance. The new modification has already resulted in

(Continued on Page 2)



...NAL Booster accelerator as seen recently from the 15th floor of the Central Laboratory building by photographer Tony Frelo. Curving at upper left is Main Ring berm; Linear accelerator is at right; Cross Gallery horizontally at bottom...

BOOSTING THE BOOSTER (Continued)

a rise to six Booster pulses per one Main Ring pulse, with workable options between one and six pulses.

According to Ed Hubbard, who has guided this Booster work, there were three main problems involved: (1) making the Booster accelerator operate well at a higher pulse rate; (2) seeing that the extraction equipment takes the multi-pulsed beam from the Booster into the Main Ring at precisely the right moment; (3) locking the frequency and phase of the Booster RF system to the Main Ring RF accelerating system.

The first problem was greatly aided by the design and installation of 16 new capacitors in the RF Systems. A joint effort between an industrial supplier and NAL staff, directed by Bill Miller and Jim Griffin, the capacitor installation will be completed within the next few weeks and will give the final capability necessary to go to the 13-pulse design operation.

The other two problems involved design of special electronic circuitry. Designed and built by John Dinkel and Ed Schmidt, the prototype RF phase lock was successfully tested last July. Building and installation of the operating circuits were completed in October in the Booster East Gallery. Three-way monitoring between the main control room, the Main Ring RF building, and the Booster gallery now allows the staff to furnish the multiple pulses as required by the present operations plan.

"It's good to see this new phase of Booster operation go so well," Ed Hubbard notes. "The accelerator will now be able to furnish beam of higher intensity with a pulse length which is more favorable for counter experiments."

Bob Peters worked closely with Dr. Hubbard on the Booster system. Jim Griffin arranged the interface between the phase lock system and the Main Ring RF system and performed vital RF tune-up.

* * * * *

NAL SPECTRUM

A recent tabulation compiled by Jim Ekberg of NAL's Accounting Department, shows that NAL employees come chiefly from the following residential locations:

<u>CITY</u>	<u>NUMBER OF EMPLOYEES</u>	<u>CITY</u>	<u>NUMBER OF EMPLOYEES</u>
Aurora	209	North Aurora	24
Batavia	53	Geneva	23
Wheaton	52	Elgin	21
West Chicago	48	Warrenville	20
Naperville	47	Lockport	17
Chicago	46	Hinsdale	12
Downers Grove	40	Lombard	11
St. Charles	34	Villa Park	11
Joliet	31	Plainfield	10
Glen Ellyn	29	Woodridge	10

* * * * *



...J. Dinkel...



...J. Griffin...



...E. Hubbard...



...H. Miller...



...R. Peters...



...E. Schmidt...

CENTREX IS HERE

After November 4, 1972

The phone number for the National Accelerator Laboratory and the 200 BeV office of U.S. Atomic Energy Commission will be --

840-3000

DUSAF's number becomes

840-3900

(Area Code - 312)

On-site numbers to remember--

Inside Paging (Dial 71 + individual number)

Chicago Line (Dial 77 + 7-digit number)

Argonne Tie Line (Dial 76 + proper extension)

FTS (Dial 8 + appropriate 7-digit number)

Mechanical trouble (Dial 3655)

Assistance with calls (Dial 3656)

EMERGENCY - Dial 3131

(Fire, ambulance, guard assistance)

NAL's phone operators beginning at 5 p.m. on Friday, November 3rd, will play a vital role in the switchover of NAL's phone system to the more modern computer controlled Centrex system. Beginning Monday, November 6th, employees will take advantage of the direct calls, ease of transfer, and conference arrangements which Centrex offers.

Lending assistance will be the day operators, Diana Burchett, Louise Hanabarger, and relief operators Norva Marshall, Dottie Alderton, and Rita Underwood. Night operators are Jim Lasenby, Bill Marquardt, and Jean Van Lear (weekends).

Giving yeoman service in directing the Centrex planning and efforts for the past two years has been Mrs. Carolyn Hines of Plant Management.



...Last few days on the cord board for Jim Lasenby, Bill Marquardt, and Jean Van Lear. The NAL switchboard has been located at 22 Potawatomi since 1968. The switchover to Centrex will be complete on Monday, November 6th. Employees should notify frequent callers of the change...



...Trying out the new Centrex console located in the Central Laboratory building, seated (L to R): Louise Hanabarger, Rita Underwood, Diana Burchett. (Standing) Dottie Alderton, Norva Marshall, Don Schindel of Illinois Bell, and Carolyn Hines, who arranges communications for NAL... (Photos by Tony Frelo, NAL)

* * * * *

DIRECTORY UP-DATING SCHEDULED

Forms are now being distributed by the NAL Visitors Center for listing correct information for a revised directory of home addresses and phone numbers of NAL employees. Such information has often proved to be valuable to visitors and other employees. The form also permits the indication that no listing is desired. If you have not received a copy of the form, please call Ext. 3560 before November 17th.

* * * * *

DEBBIE'S BACK HOME

Debbie DeLuca (wife of Bill DeLuca, Accelerator Section) is back at home in Clarendon Hills after 3½ months at the University of Minnesota hospital undergoing major surgery. Still weak, but gaining strength, Debbie sends her appreciation to NAL people for cards, letters, and contributions to the hospital fund. She is shown here with her children Diana, age 2, and Billie, age 8, and her mother, Mrs. Dorothy Dowding, who donated one of her kidneys to Debbie.



* * * * *

NEWS FROM NALWO

A meeting of the Bridge Group will be held on Tuesday, November 7th at 1:00 p.m. at the White Farm. Please call Mary Fray (232-0724) if you plan to attend.

Parents of pre-school children - come see the NALWO Playgroup! We are a cooperative nursery school, meeting three mornings a week at the White Farm. To visit, call Ellen Ljung at 231-8513.

* * * * *

LOOKING AHEAD

Friday, November 17th - The International Film Society presents "A Nous LaLiberte," a French Film, to be shown in the Village Barn - 8:00 p.m.

Thursday and Friday, November 23 & 24 -- Thanksgiving Holiday

Sunday, December 17th - Annual Christmas Dance, St. Andrews County Club, Highway 59 - West Chicago.

* * * * *

CONGRATULATIONS -

[REDACTED] Larry is a member of the NAL Accelerator Section.

* * * * *

!!! REMEMBER, CREDIT COSTS LESS AT YOUR CREDIT UNION!!!

CLASSIFIED ADS

FOR SALE - 1 set of snow tires, 700-13 stud/wheels (also for Toyota). 700 mi. on tires-\$50 a pair. Call Pete Lentini, Ext. 363 or 467.

FOR SALE - 19" B/W Portable TV w/stand-\$85; cus/built couch, antique white-\$110; 9 pc. light/wood dining/rm. set-\$175. Call Spike, Ext. 351 or 668-4242.

FOR SALE - Hip boots, brand new, size 10. Call Ed, Ext. 580.

FOR SALE - Old English Sheep dog, male/6 mos. AKC - \$325. Call Richard Parry, Ext. 504 or 892-8346.

NEEDED - Homes for disadvantaged kittens - 2 tabby, 2 blk. Call Janelle Zamie, Ext. 724 or 553-6260.

GUYS - Come on, let's join up for the NAL basketball team, starting November 1st. Call Dominick Carullo, Ext. 555 or Roy Justice, Ext. 437.

* * * * *

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 312-231-6600.

National Accelerator Laboratory
P.O. Box 500
Batavia, Illinois 60501

U. S. Postage Paid
Non-Profit Org.
PERMIT No. 204
Batavia, Illinois