

The Village Courier



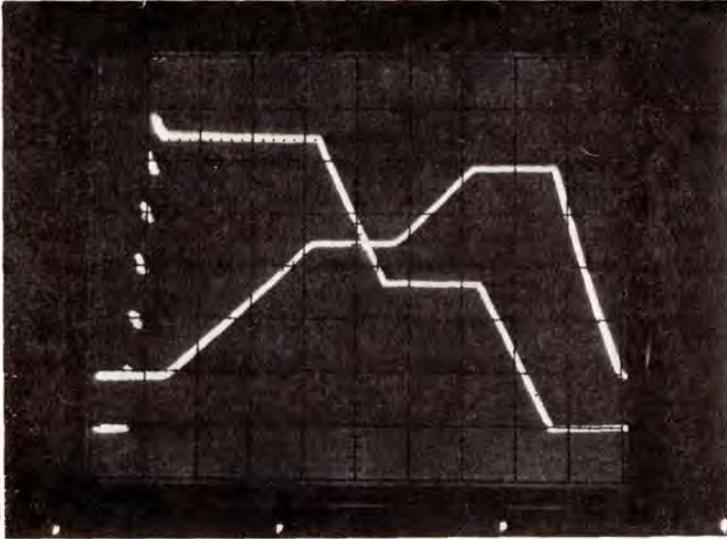
national accelerator laboratory

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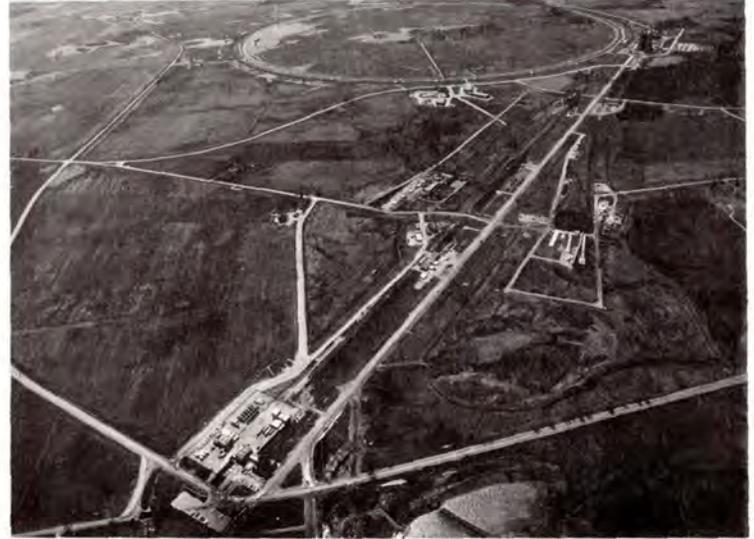
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NEW MAIN RING MODE MULTIPLIES NAL CAPABILITIES



...Scope trace of new dichromatic mode of operation in the NAL Main Accelerator. Acceleration cycle begins at lower left (lower line), rises to 200 BeV level, flattens while beam is extracted, then rises to 300 BeV, remainder of beam is extracted, cycle begins again. Upper line registers beam intensity during same cycle. Dots at left are six Booster pulses during injection...



...Main Accelerator at NAL, recently testing a new mode of operation, now has capability of sending beams of different energy simultaneously to external experimental areas. Several experiments are planned which will utilize beams of 400 BeV energy soon. With the new operating mode, different primary beam energies can be fed to each of the experimental areas in the foreground...

The main accelerator at the National Accelerator Laboratory has successfully tested a new mode of operation which allows several proton beams of different energies to be directed to the experimental areas during a single acceleration cycle. On Tuesday, March 26, an extracted beam of 200 BeV protons was sent to the NAL Meson and Proton experimental areas while, at the end of the same cycle, a 300 BeV beam pulse was sent to the Proton and Neutrino areas. In effect, the new mode gives the NAL accelerator system the ability to act as two conventional accelerators operating simultaneously. The efficiency and the capability of operating the single NAL machine in this manner are immediately apparent.

The new NAL operating scheme stemmed from a need to continue serving the dozen or more experiments in the Meson Area (where 300 BeV is the maximum energy that can be used at present) at the same time that beams of higher energies might be needed in other areas. The recent successful test has proven that the NAL machine can accomplish this feat.

Dick Cassel, leader of the Accelerator Division's Electrical/Electronics Support group, has been the principal designer of the Main Ring power supplies. Howie Pfeffer, engineer in the Main Ring group, has carried on development of power supply firing circuits and the Main Ring ramp control circuits so that the flexibility in the power supplies needed for the two-energy mode could be utilized. The Main Ring activities were coordinated by Dr. Boyce McDaniel. Dr. McDaniel directed the Accelerator Division for a time in 1972, then returned to his position as director of the Cornell University Laboratory of Nuclear Studies. Now on a sabbatical leave from Cornell, he returned to NAL in January to give his expertise to some of the projects of the NAL Accelerator Division.

Helen Edwards, head of the Accelerator Division External Beam Systems group, and associate head Gene Fisk, together with Claus Rode, Jack McCarthy, John Bobbitt, and the technicians work-

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ing with them, modified the beam transport equipment in the switchyard so that the two different energies could be extracted from the Main Ring to the experimental areas during the same pulse.

Extensive modifications were required in the switchyard and extraction controls systems. This difficult phase of the work was performed by Al Maier and Rodney Smith, together with Bob Daniels, head of the Controls group.

The added complexity in the accelerator and switchyard systems provided a challenge for the accelerator operators in the Control Room who successfully coped with the situation in the amazingly short time of just a few hours.

The two-energy (dichromatic) operation consists of interrupting a normal 300 BeV acceleration ramp, for example, as it rises to say 200 BeV, creating a flat step at this point, a so-called "front porch," during which time a portion of the beam is peeled off and sent through part of the external beam system. The acceleration ramp then resumes and the remainder of the beam is accelerated to 300 BeV where it is extracted on the normal flat top; this beam is then sent to a different experimental area or areas. An acceleration cycle which would take 6.8 seconds to reach conventional 300 BeV takes nine seconds in a dichromatic mode.

The dual pattern involves an adjustment in the power supplies of the Main Ring so that one portion of the supplies accounts for the first acceleration level, the rest of the supplies coming on to handle the second stage push. During the shutdown in May, modifications will be made to the power supplies to ensure long-range success of the new running technique. A new condenser bank in the master substation, designed to permit operation at energies up to 500 BeV, will reduce the number of supplies needed in each portion of the acceleration ramp.

Until now, the accelerator has delivered beams of fixed energy to one, two, or three external experimental areas at the same time, depending on the current physics research program. Experiments that were set up for this energy collected data, while experiments requiring a different energy were scheduled for beam time during other run periods.

In the coming months at NAL, the experimental research program will be able to capitalize on this major new improvement in the operating capability of the accelerator. Following a series of tests on accelerator operation at energies up to 500 BeV, which are planned during the month of May, it is expected that there may be a run of several weeks' duration in June when proton beams at an energy of 400 BeV or higher will be directed into the Proton and Neutrino areas for a group of experiments that are set up there. Present plans call for the 15-Ft. Bubble Chamber to operate at that time for the first look there at the interactions of these very high energy particles. With the new technique, the Meson Area may be able to run its experiments at lower energies without interruption during these higher energy tests.

IN THE NAL AREA

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....Wheaton College Artist Series tickets for the 1974-75 season are now on sale. Main floor seats are \$16.00 and \$13.00; balcony seats are sold to students at \$7.00. There are eight concerts by outstanding artists in the season. For further information, contact the Ticket office, Wheaton College, 682-5010.

....Veterans employed during the day may prepare for college courses in a special program offered at the College of DuPage, Glen Ellyn, in the evenings with G.I. compensation. For further information, call 858-2800, Ext. 204/205, Mr. Jerry Dennis.

....Author John Wallace Spencer will lecture on the mysteries and facts surrounding the "Bermuda Triangle" on Thursday, April 4 at 8 p.m. at the College of DuPage. The Bermuda Triangle is an area extending from the southeastern coast of the U.S. to the middle of the Atlantic Ocean where ships and airplanes have disappeared without a trace. Spencer has written a book on the subject, "Limbo of the Lost." Tickets are \$2.00 in advance, \$3.00 at the door.

...."Synthesia," a professional combination of photography, visual effects, music and art, will be presented at North Central College, Naperville, Monday, April 8 at 8 p.m. in Pfeiffer Hall. Admission is \$2.00.

....Elmhurst College presents a Black Affairs Concert and Talent Show on Friday, April 5, at 7:30 p.m. and a Black Affairs Gospel Jubilee at 7:30 p.m. on Sunday, April 7, at Hammerschmidt Chapel, 190 Prospect Street, Elmhurst.

....Singer Harry Chapin will perform in concert at North Central College, Naperville, on Friday, April 19, at 8:30 p.m. in Pfeiffer Hall, 319 East Benton, Naperville.



...Harry Howe...

Harry Howe, who has worked as Safety Officer in NAL's Accelerator Division since early 1970, left the Laboratory recently for a position at the Argonne National Laboratory as Health Physics Supervisor. On the occasion of a farewell luncheon, Harry expressed his feelings about his years at NAL, where people are involved in a "fantastic endeavor, doing our best together," according to Harry. And, borrowing a Dostoevsky quote, he left this thought with his colleagues:

"And even when we are occupied with more important things, whether we attain to honor or fall into great misfortune --- still let us remember how good it is here, when we are all together, united by a good and kind feeling which makes us, for the time being, better perhaps than we are..."

Harry will be in touch with his NAL colleagues in the next few weeks as they arrange a Canadian canoe trip.

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APPLIANCE SAFETY REMINDER

Vince Zernoski of the NAL Safety Office, reminds NAL people to use electrical appliances safely. If not used properly, they are hazardous to life and property. Heating appliances such as hot plates, coffee pots, and space heaters must be used with care. Turn them off at the end of the day or when they are left unattended. Keep them away from combustible materials.

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VOLUNTEERS NEEDED FOR BLIND RECORDINGS

Recording for the Blind, Inc., Naperville, needs volunteers to record technical text books for their organization. Production of each book requires a team of two volunteers -- one to read and one to monitor. Call 420-0722 for further information, Ms. Kay Vanderploeg.

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...The Scottish Highland cattle given to the Laboratory last Fall by Mr. and Mrs. James Bannister have lost much of their shyness, are now content to stand still and stare at passing photographers who in turn marvel at the widespread horns and shaggy coats of the animals. Their pasture is located on old Batavia Road across the road from the buffalo pasture...

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(Photos by NAL photographers)

EASTER EGG HUNT, SATURDAY, April 6

The Easter Bunny invites all the children (2-12) of NAL, AEC, DUSAF, B & H, to bring their easter baskets to gather eggs at the Easter Egg Hunt Saturday, April 6 at 1:00 p.m. near the Village Barn. An Easter Bunny will give the children easter candy. Visiting experimenters' families are welcome. For further information, call Frank Juravic, Ext. 3274.

PLAYGROUP AT WHITE FARM

The National Accelerator Laboratory Women's Organization (NALWO) operates a cooperative Playgroup for pre-school children at the White Farm on Eola Road. Mothers of the children in Playgroup take turns leading activities of the children. Members of the co-op project are NAL employee families or visiting experimenters' families.

Group 1 is open to children from 18 months of age and meets Monday, Wednesday and Friday mornings from 8:30 a.m. to 11:15 a.m. Group 2 is for children who are at least three years old before January 1 and meets Tuesday and Thursday mornings from 8:30 a.m. to 11:15 a.m. and on Fridays from 11:30 a.m. to 2:30 p.m.

Children and parents are invited to visit or to become members. For information and to arrange a visit, call Jo Russell, 231-5805 or Dot Bourquin, 231-7663.

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EMPLOYEES LECTURE SERIES

"The NAL Accelerator - How it Works"

Friday, April 5 - 11:00 A.M.

Dr. E. Hubbard, Accelerator Division

"The Booster"

CLASSIFIED ADS

FOR SALE - Plymouth Satellite (Custom), Red, 4 door Sedan, V8 318 GID., pwr. front disc brakes, pwr. steering, low mileage, \$2700 or best offer. Call Ernie Guzman, Ext. 3210.

FOR SALE or TRADE - 2 Sears G78-15 Tires, like new, \$40 or trade for 2 J78-15 tires in good cond.;

WANTED: Someone to translate Hungarian. Call Donald Champion, Ext. 3719.

FOR SALE - Bicycle built for two, \$130. Used one season. Call Mildred, Ext. 3324.

FOR SALE - 5 piece prof. Ludwig drum set + hware and cymbols, \$500. Call Fred Cadena, Ext. 3856 or 896-6649.

TO GIVE AWAY - 1 six-month old female kitten (moving & must find gd. home). Call Debby, Ext. 3587.

TO GIVE AWAY - A lovable dog, loves children. Call Jean, Ext. 3585 or 896-3847.

FOR SALE - Suzuki 90 Motorcycle, excellent condition, loaded-\$350. Call F. Jasek, Ext. 3719.

TO GIVE AWAY - A yellow (part shepherd) dog, friendly. Call Site Patrol Office, Ext. 3414.

FOR SALE - A 10 gal. Sears portable humidifier. Call Margaret Pearson, Ext. 3351.

FOR SALE - 16 cubic feet upright Freezer like new. Used four months, \$200 - cash and carry. Call Karl Schmidt, Ext. 3700.

FOR SALE - Sears refrig., gold tone, 1½ yrs. old w/self defrosting, and a Kelvinator stove, 30". Both for \$350. Call Kathie at 3222 or 553-0118.

FOR SALE - 10" extended custom springer w/risers, Z-bars & 2 hdlights w/bracket, spring not chrome. \$125. Call Dave Hornback, Ext. 3575 or 898-4493.