

# The Village Crier

national accelerator laboratory

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## LINAC ACHIEVES HIGHEST PROTON BEAM ENERGY IN U.S.

It seems that nearly every week brings news of another significant milestone in the development of the NAL accelerator system.

At 1:50 p.m. on Thursday, July 30, the Linear Accelerator Section staff recorded still another major triumph in its continuing record of achievements. At that time, a proton beam in the Linac was accelerated to 66 Million Electron Volts (MeV). It was the highest energy yet achieved at NAL --- and, more notably, it was the highest energy ever achieved in a proton linear accelerator in the United States.

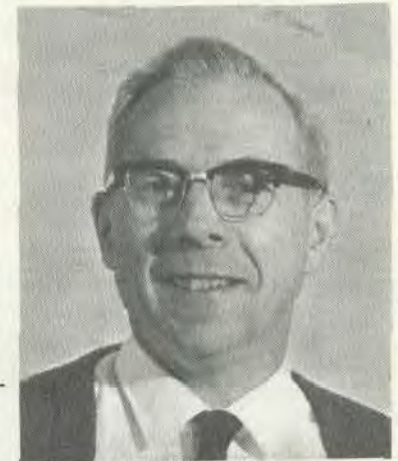
Only the Linear Accelerator at Serpukhov, near Moscow, in the Soviet Union, has a proton beam with energy higher than that at NAL. It has achieved 100 MeV.

Donald Young, Linac section leader, said that the NAL beam was accelerated through the first three linac tanks, which NAL and contractor staff have been busily installing in recent weeks. Principal contractors aiding the NAL staff were Borg, Inc., pipefitters, and A.S. Schulman Electric Co.

"Physicist Cy Curtis has coordinated the operation. However, it is important to note that everyone in the Linac section was in on this effort," said Young.



--- DON YOUNG ---



--- CY CURTIS ---

Measurements of the beam properties are now in progress by the Linac Section staff -- that is, they are analyzing the emittance, energy, amplification of phase and amplitude of cavity voltages.

An informal observance of the event was held in the Linac building on the Main Site.

Sometime in early October, the Linac Section will seek another record. The objective then will be a 139 MeV beam. This beam will be achieved by the linkage of six tanks in the Linear Accelerator enclosure. If successful, NAL then will have a higher energy beam than any other proton linear accelerator in the world.

At present, the first three tanks and radio frequency systems of the Linac are complete. In addition, drift-tube alignment is almost complete in tank number five. All sections for tanks 6, 7 and 8 have been delivered and the last sections for the last tank (number 9) will be delivered shortly. Work also is proceeding on schedule on installation of the remaining RF systems for the Linac.

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(Photos on Page Two)



CY CURTIS  
SITS  
AT  
CONSOLE  
DIRECTING  
66  
MeV  
OPERATION....



THE  
LINAC  
BULLETIN  
BOARD  
BRINGS  
THE  
NEWS....

(Photos by Helen Severance)

#### FIRST NAL COOLING POND BECOMES OPERATIONAL

Eventually, many large ponds will exist on the NAL site to provide water for cooling various components of the accelerator and experimental apparatus.

At 10:30 a.m. Monday, July 27, water was turned on for the first time to fill the first of these ponds -- the Central Utility Cooling Pond. It was an informal ceremony with Robert R. Wilson, NAL Director, turning the valve as section leaders and others watched. -- The purpose was to fill the cooling pond which is primarily for the Booster, the intermediate component in the NAL accelerator system between the Linac and the Main Accelerator.

At first, only a trickle of water appeared in the pond -- but that was the way it was engineered. As time passes, the pond will be constantly filled with water to cool the

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FIRST NAL COOLING POND BECOMES OPERATIONAL (Continued from Page 2)

Booster magnets as they become part of the operational system.

Following is a brief description by Ward Bosworth, NAL Plant Management engineer, on development of the Central Utility Cooling pond:

"The pond provides cooling by exposing a large surface of water to the atmosphere, where for every pound of water evaporated, approximately 250,000 calories of cooling are obtained. These calories leave the pond as the heat or energy that is necessary to change liquid water to water vapor."

"A water spray system has also been installed in this pond to expose additional water surfaces to the air. Further cooling surfaces at the central point have been provided by cooling towers located on the roof of the Central Utility Building. The cooling pond concept has been extended to cool the magnets of the Main Ring in a series of large ponds and a ditch circling the inside of the Ring."

Pond water does not directly come in contact with the magnets. Through heat exchangers the pond water extracts heat from Low Conductivity Water circulating in the magnets (normally referred to as "LCW water"). The LCW water flows in a closed loop pipe system passing successively through the magnets and heat exchangers.

Another use of the pond cooling water is to provide cooling for refrigeration machinery. This refrigeration is used to provide a lower temperature LCW water as well as for comfort cooling.

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*PHOTOS TAKEN AT THE COOLING POND "CEREMONY"*



*....Water begins to flow into first cooling pond....*



*....RRW turns the valve for Central Utility Cooling Pond....*

*(Photos by Tony Frelo, NAL)*

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ANOTHER NAL PICNIC WILL BE HELD SUNDAY, AUGUST 23, FROM 10:00 A.M. to 3:00 P.M. IN THE NAL VILLAGE. REFRESHMENTS WILL BE SERVED.

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## CONSERVATION PROJECTS STARTED

In line with the NAL policy of supporting a strong pro-conservationist philosophy, the Laboratory took its first steps Wednesday, July 29, in setting up its long-range wildlife conservation program.

Forty ducks were released on the NAL 6,800-acre site in DuPage and Kane counties. The ducks are pen-raised, but are of a wild species. They were provided by the Max McGraw Wildlife Foundation, Dundee, Illinois.

Also released during the same week were several coveys of quail provided by the Illinois Department of Conservation. "We hope these birds will be the nucleus for a revitalization of game bird populations in this entire area," said Rudy Dorner, Site Manager.

"A continuing program of habitat restoration and breeding stock introduction will make possible the re-establishment of species long absent from this part of Illinois," he said.

Dorner added, "We can use the help of all NAL people in providing protection for this stock. Even though there is now no hunting on the NAL Site we have had some problems with poaching and we hope that this can be eliminated."

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## FOR HORSE LOVERS

Rudy Dorner, NAL Site Manager, and Charles Marofske, NAL Personnel Manager, would like to determine if there is sufficient interest among members of the NAL family in establishing a horseback riding club on the site. If there is such an interest, it is planned to offer the rental of horses at about \$3 an hour for riding on established trails. This would be a self-supporting operation. If you are interested, please call Personnel, Ext. 225.

## DUPLICATE BRIDGE WINNERS

Winners at the duplicate bridge session on Thursday, July 30th, were Spike Severance, Public Information, and Max Palmer, Linac, with the Warners, Marv and Carol (DUSAF), coming in second. The next session will be held in the NAL Cafeteria on Thursday, August 20th at 8:00 p.m. Please contact Spike, Ext 351, or Bill Johnson, 879-2900, if you plan to be there.

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SWIMMING POOL MEMBERSHIPS CAN BE PURCHASED AT THE NAL PERSONNEL OFFICE. TO DATE, 135 FAMILY SEASON MEMBERSHIPS AND 25 WEEKLY PASSES HAVE BEEN SOLD.

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## SOFTBALL SCORES

### July 28th games

Machine Shop	10 vs. Personnel	10
Radio Frequency	12	Physics Research 13

### July 30th games

Rained out

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## CLASSIFIED ADS

WANTED - Pesticide-free and weed-killer-free lawn clippings for garden mulch. Call Peter Gollon, Ext. 461 or 964-5371.

FOR SALE - Mason & Hamlin grand piano. Excellent condition. Call 896-2714 or Ext. 350.

FOR SALE - Ladies 26" Schwinn Collegiate bicycle. 5 speed, stick shift. Blue. Call Peter Gollon, Ext. 461 or 964-5371.

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