

# The Village Enier



national accelerator laboratory

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## ACCELERATOR GROUP COMPLETES CAPACITOR INSTALLATION



*...Bill Miller points out the simplicity of new Kapton screen capacitor design, at right, over complex old model at left...*



*...Fred Sarver (R) demonstrates assembly procedure to techs Jeff Ruffin (L) and Chris Barnett...*

Improvements and modifications in the NAL accelerators depend in large part on the suggestions and innovations of the crews who have now run the machines for two or more years. Their operating experience and their close-up observations of the intricate machines give them a real look at what is happening. With the savvy of long experience, they create the changes that are now beginning to season and mature the unique NAL systems.

In the NAL Accelerator Division, the big goals are to increase the intensity (retaining more protons in the beam) and improving the reliability of the machine (keeping it running without unexpected down time for repairs). Each group in the Division has projects for developing its particular aspect of the accelerator, to contribute to the overall goals.

One of the most intensive and most successful efforts in this vein has been that of the R.F. Power Amplifier Repair and Development group in the Accelerator Division. For two years, this group coped with unsatisfactory screen capacitors in the power amplifiers used to supply R.F. accelerating power to the Main Ring and Booster R.F. cavities. Limited designs were available commercially. Those in use at NAL contained 55 small ceramic parts which often coaxed each other into destruction at a cost of \$2.00 each, or \$110.00 in each of 31 cavities. Repair of these failures meant eight hours of crew time, removing the power amplifier module from the Ring, testing and matching it electrically and mechanically before returning to the beam line. "They got us by, but they became a contributing factor to down time," reports Project Engineer Bill Miller. Fred Sarver, who directs the work of the technicians in the group, charted this down time and found that since August, 1972, 49 out of 70 repairs involved the screen capacitors.

A prototype screen by-pass capacitor was built and tested in July, 1973. It was installed in the Main Ring for testing in August and it has run continuously without repair or failure. The new capacitor contains three flat metal planes with two sheets of Kapton insulation in between, a total of five parts replacing the 55 individual ceramic capacitors in the more complicated earlier design.

The group began last November to install the improved capacitors in the Main Accelerator

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## ACCELERATOR GROUP (Continued)



...Installation of new screen capacitor in R.R. power amplifier module. (L-R): Sarver, Tim Gierhart, Ruffin, Barnett, Bill Swedberg...



...Swedberg (seated) explains re-wiring of cascode driver module of the R.F. power amplifier to Carl Maier (L) and Gierhart...

whenever they had access to the Ring. During the recent February shutdown, their all-out effort completed the total of 15 installations in the Main Ring, 16 in the Booster. At the same time, their project gave an opportunity to install newly designed ceramic water insulators in each water path to correct potential water leaks that have plagued the cavities in the past.

After a month of running experience, the men are optimistic about what the project has done. Replacement now takes an hour, at a materials cost of \$2.00. Even a less than perfect record would mean considerable savings in money and time, allowing efforts to be directed to other priorities. The same group has been given the assignment of building ten more R.F. amplifiers for the accelerators.

In addition to Miller and Sarver, participating in the capacitor project were: C. Barnett, T. Gierhart, C. Maier, J. Ruffin, W. Swedberg, and John Zuk who assisted Miller in the prototype stages of the capacitor development. Swedberg earned his electronics technology degree from Northern Illinois University; Barnett is 30 hours away from the same degree; Gierhart is a graduate of DeVry Tech School, Phoenix; J. Ruffin who was introduced to electronics through the TAT program at NAL is now working on his A.A. degree at Waubensee; C. Maier brings Air Force technology to the group. Miller, Zuk, and Sarver have been working with the NAL R.F. systems since 1968.

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...Ruffin installing completed R.F. power amplifier on Booster test cavity...



...John Zuk assembling old screen capacitor...

### NAL WEEKLY CALENDAR

Thursday, March 21 - 4 p.m. - Meeting on Women's Concerns - Conference Room - 1st floor west - Central Laboratory.

Friday, March 22 - 11 a.m. - Employees Lecture Series, "The NAL Accelerator -- How It Works." Cy Curtis will speak on "Pre-Accelerator."



N.A.L.  
ST. PAT'S DANCE  
SATURDAY, MARCH 16, 1974



Left:  
Paul Reardon



Right:  
Gerry and Fred  
Cload



Left:  
Gus and Jackie  
Rehbein



Right:  
Albi and Jose  
Poces (L); Dee  
and Jim Smith.



...Ed and Ruth Ann Gray...



...Liz Foster, Helen Ecker,  
Jean Plese, Denise Augustine...



...Ellen Kukla, Max Palmer,  
Joe and Harriet Otavka...



...Jean and Wally Pelczarski,  
Dave DeWitt...



...Frank Juravic...



...Jeff and Ellen Kukla...



### PROTONS ADVANCE TO TOURNAMENT

The NAL Protons basketball team tonight (Thursday, March 21) play the first game of the final tournament for championship of the 1974 Naperville Y - B-League season. Spectators are welcome at the 7:00 game at Naperville North High School. The Protons go into the tournament with a 10-1 record, the best of their five seasons of play.

The Protons are managed by Roy Justice, coached by Nelson Sample and Larry Jackson.

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### ANNUAL NALREC 1974 ARTS & CRAFTS SHOW COMING

Two months' notice to get your exhibits started - May 13 thru 17 - Central Laboratory Atrium. Employees and relatives of NAL, AEC, DUSAF, B & H Janitorial and Advance Security and visiting experimenters and their families are invited to participate. Applications will be sent out at a later date. Call Denise Augustine, Ext. 3048 for further information.

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### ATTENTION NAL GOLFERS

The NAL 1974 Golf League is being organized. Play will start on April 30, at the Arrowhead Golf Course. Submit a 4-member team, or sign up individually with Bob Kocanda or Ellery Cook, Ext. 3728, before April 19.

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### IN THE NAL AREA

....The College of DuPage's Business/Accounting Club will give free assistance with federal income tax forms. Members of the club have been trained to handle most of the common problems encountered in completing tax forms. They also maintain a list of professional tax accountants for those with complex or involved tax problems. If you are interested, call 858-2800, Ext. 438 or 666 to make an appointment. You may also come to the college on weekdays between 10 a.m. and 10:55 a.m., in Room 2007 - Building A, or from 2:30 p.m. to 3:30 p.m. in Room 142 - Building M where members of the club will be available.

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Congratulations...to Carmen and Ralph (Machine Shop) Ovitt following their marriage on March 14 in Geneva. They will live in Aurora.

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### CLASSIFIED ADS

Classified Ads to run in THE VILLAGE CRIER should be submitted in writing by Monday noon for publication the following Thursday. THE VILLAGE CRIER office is now located on the Atrium Floor West of the Central Laboratory. There is no charge for these ads.

FOR SALE - 1973 Gran Torino Wagon, p/s/b, a/c, 6 pass. Call Ralph Mataya, Ext. 3303.

FOR SALE - 1969 Mustang, 3 spd. fl. shift, radio, bucket seats, 19 mpg., \$750. Call D. Nease, Ext. 3139 or 231-3798.

FOR SALE - 1966 Ford, 6 cyl., runs gd., gd. gas mil. Call Jim Falk, Ext. 3734 or 892-1338.

FOR SALE - 22" Rotary Mower, 3.5 h.p., 6 yrs old, gd. cond, \$20. Call John Stoffel, Ext. 3355.

FOR SALE or TRADE - Tire pressure gauge (10-130 lbs.); light meter; radiograph; dissecting kit, TV ant. chimney mount. WANTED - Auto compass, camera tripod. Call Chuck Klang, Ext. 3721 (8-4).

WANTED - Nurses to volunteer at Wheaton Planned Parenthood Clinic. Call A. Pariser, 690-9052.

FOR SALE - Kitchen table, wal. formica 60 x 41 w/leaves & six plastic chairs; elec. typewriter - "Brother," heavy duty desk model, many other features; Call Frank Mehring, Ext. 3782.

FOR SALE - Area rugs (9 x 12 & 8 x 10) orange/white/tan strip, \$50 & \$35; Kitchen set, wrought iron blk. wood grain formica top w/4 chairs, \$35; Window a/c, Sears, 18" wide, 8000 BTU - 110 V, used two seasons, \$125. Call A. Skraboly, Ext. 3698.

FOR SALE - Sears 8 trk. tape deck w/FM radio-\$80; Sears G-78-14 Snow tires on Plymouth rims-\$80; Westinghouse 21" B/W TV (all channels)-\$35; masterwork 2 channel reel recorder-\$40. Call Ernie Guzman, Ext. 3210.

FREE - 1 male kitten, 6 wks. old. Call Jim Biggs, Ext. 3189 or 3190.

WANTED - Postage stamps, U.S., foreign, post cds. Send to Greg Lawrence, Meson Dectector Bldg.

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