BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

Four Major Upgrades Completed During AGS Shutdown

The beam indicator is screaming loud and clear — and that can mean only one thing: The Alternating Gradient Synchrotron (AGS) is back on the air after a four-month, scheduled shutdown.

During that shutdown, four major projects were completed as part of the ongoing AGS upgrade program — the culmination of which will come in 1991, with the completion of the Accumulator-Booster. (See story, page 1.)

The goal of the program to upgrade the 30-billion-electron-volt (GeV) accelerator is to increase the intensity of protons 1.5×10^{13} protons per pulse to 6×10^{13} with the Accumulator-Booster as the injector, to increase the polarized proton intensity by a factor of twenty, and to accelerate all heavy ion species ranging from silicon to gold and uranium.

To continue the upgrade begun in 1984, the AGS was shutdown on July 1. On November 1, protons were once again injected into the half-mile-in-circumference AGS ring from the 200-million-volt linac. Simultaneously, the beam scream — the audio signal indicating that particles are pulsing around the AGS — was heard throughout the cavernous experimental halls. The experimental physics program resumed on November 14.

"Despite the many modifications of the machine that were implemented during this summer's shutdown, the start up of the linac and the AGS ring went very smoothly," says Theo Sluyters, head of the AGS Accelerator Division.

Four major projects completed were: a high-intensity, radio frequency quadrupole preaccelerator; a low-energy, fast-beam chopper; a high-frequency dilution cavity; and a new vacuum instrumentation and control system.

In addition to the completion of other projects, particular attention was paid during this shutdown to the

(Continued on page 3)

Roger Stoutenburgh

James Alessi, leader of the RFQ II preaccelerator project, standing in front of the newly installed, 750-keV RFQ II.

The Booster: A Progress Report

After receiving high marks at a Department of Energy review in April, the Accumulator-Booster Project at the Alternating Gradient Synchrotron (AGS) has continued full-speed ahead. During the last six months, notable progress has been made in three major areas: conventional construction, shielding between the Booster and the AGS, and RF systems.

The Booster is expected to be completed in early 1991. It will increase the intensity of protons and polarized protons coming to the AGS from the linac for high energy physics experiments, as well as allow the AGS to accelerate the whole range of heavy ions generated in the Tandem Van de Graaff accelerator. Additionally, the Lab hopes to send those heavy ions on into its proposed Relativistic Heavy Ion Collider, known as RHIC.

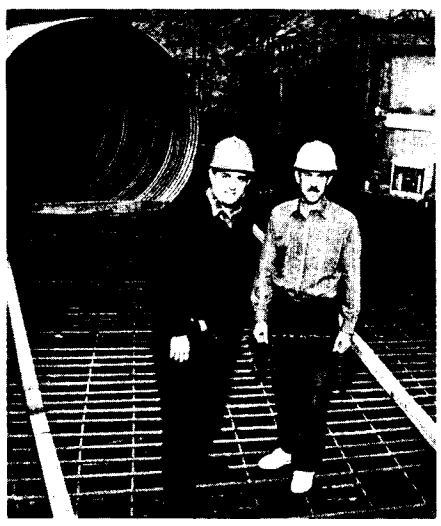
Although the Booster Project is administered by the Accelerator Development Department (ADD) and headed by W.T. Weng, it actually draws heavily for assistance from the AGS and other departments throughout the Lab.

Working Against Time

Even though ceremonial ground-breaking for the Booster occurred in September 1987, actual tunnel construction only began in March of 1988. Since then, according to Michael Schaeffer of the Plant Engineering Division (PE), the entire tunnel enclosure has been completed, and work has begun on concrete structures that will tie the Booster to existing facilities.

Schaeffer is part of PE's Project Coordination Group, headed by Paul Mohn, which includes architects and civil, electrical, mechanical and structural engineers. In addition to Schaeffer and Mohn, Jack Feldman and Leopold Magerovich also oversee conventional construction for the Booster project.

(Continued on page 2)



Roger Stoutenburgh

Jack Feldman (left) and Michael Schaeffer at interface number three of the AGS injection area for both proton and heavy ion beams.

Peter Horton

US and USSR in Agreement About Physics Research

For eleven years, joint Soviet and American interest in scientific research has been the occasion for annual meetings of the US/USSR Joint Coordinating Committee for Research on Fundamental Properties of Matter (JCC-FPM). At the eleventh meeting, held this year at Brookhaven November 21-22, an agreement to cooperate in high energy, nuclear and accelerator physics was signed by the two chairmen of the committee: Wilmot Hess (left), Associate Director of the Department of Energy's Office of High Energy and Nuclear Physics, and Atlant Vassiliev (right), Head of the USSR State Committee for the Utilization of Atomic Energy's Main Division of Fundamental Problems of Nuclear Physics and Controlled Thermonuclear Fusion.

Previously, most of the JCC-FPM's experimental projects — such as the D-Zero detector on which BNL is a collaborator — have been located at Fermi National Accelerator Laboratory. Soon, however, two new JCC-FPM experiments will start at BNL's Alternating Gradient Synchrotron, one involving heavy ions and the other, the measurement of the anomalous magnetic moment of the muon. Laboratories at Cornell, Lawrence Berkeley, Los Alamos, Stanford and various other universities also take part in JCC-FPM cooperative research and visitor exchanges.

Selective Evacuation Drill Scheduled for December

A selective evacuation drill will be held at the Laboratory sometime in December, though the date and time have yet to be determined. To reflect as closely as possible a typical day at the Lab, it will be held late in the afternoon and will end by 5 p.m., when normal Lab operations will resume.

This month's drill will help verify procedures for selective evacuation outlined in the Lab's emergency plan. Employees and contractors should participate in the drill, though personnel essential for continuity of operations will be notified in advance to remain. Also, on-site residents are not expected to evacuate the site; they and their families should go to their quarters and remain there until the drill is over.

As the drill begins, the incoming light at the main gate will be switched to red, and no traffic will be allowed to enter the site until the the drill is over. Therefore, if the drill coincides with employees' arrival for an evening shift, they will have to wait to go on duty until the drill has ended.

To know when to leave the Lab site:

- **Listen for the signal.**
  The drill will begin with a Lab-wide alert — a continuous sounding of the site sirens. At the same time, a general call will go out via the Plectron communication radios to all department and division offices, which will notify employees.
- **Find the assembly areas.**
  As soon as you hear the signal, go to your building's assembly area. Your department/division safety coordinator can tell you where this is. If you are in unfamiliar surroundings, go to the nearest principal building and ask where the designated area is.
- **Meet your carpool**
  When all the people in a building have gathered at the assembly area, carpool passengers should proceed to their usual pickup points, then wait there until their drivers' zones are evacuated and they can be picked up.
- **Wait for notification.**
  If you are not in a carpool, wait in the assembly area until notified, again via Plectron, that it is time to evacuate. All three gates will be open for exiting traffic.
- **A final signal.**
  When traffic flow allows it, an intermittent sounding of the site sirens and a general Plectron call will signal immediate evacuation of remaining employees.

For more informaion about the selective evacuation drill, call Emergency Planning Coordinator Frank Crifasi, Ext. 3144.

Booster (cont'd)

Viewed from the air, the Booster looks like a doughnut sitting between the AGS and the linac. The tunnel itself is an 11-foot-in-diameter, corrugated-steel pipe, buried under 15 feet of earth.

It was vital that the penetrations into existing AGS facilities be completed within the four-month, AGS summer shutdown, so as not to interfere with the normal AGS operating schedule. "Immediately after the accelerator was turned off," says Schaeffer, "bulldozers began to remove the earthen shield over sections of the AGS and the linac." The facilities were penetrated, and a lot of concrete work was done before the earthen shield was put back. "The crucial concrete work was completed in the available time," notes Schaeffer.

As a result, the Booster project is on schedule. In the spring of 1989, installation of accelerator components will begin. All services to the facility, including power, lights, air and water, will be completed by next summer's end.

Roger Stoutenburgh

Assembled by the shielding between the AGS and the Booster in Bldg. 914 are: (kneeling, from left) Pete Bilski, Ripp Bowman; (standing, from left) Dave Dayton, Joe Scaduto, Phil Thomason, Fred Traxel; and (on ladder) Billy Washington.

Roger Stoutenburgh

Shown with the protoype rf system now under test in Bldg. 925 are: (kneeling, from left) Bob Chmiel, Steve Valentino, Mike Lutz, Kenny Vitkun, Louis Cannizzo; (center, from left) Gerry Young, Charles Gardner, Jim Mottl, Steve Bubka, John McCaffrey Jr., John Wilcenski; (top, from left) Joe Lombardo, Kenny Robins, Conrad Dabrowski and Eddie Stein.

700 Tons of Shielding

Also critical to keeping the project on schedule was the work done by the Experimental Areas Group within the AGS Department. Composed of engineers, designers, surveyors, riggers and various support people, the group regularly works on installing AGS experiments.

According to the group's head, Alexander Pendzick, for the Booster project, they were asked to design, fabricate and install shielding between the Booster and the AGS. "Essentially, we built a radiation barrier so that people could safely work in the Booster area with the AGS running," says Pendzick.

They started the job in June and were done by the end of October. The AGS started up in early November, as planned. (See story, page 1.)

The job was done with about 700 tons of shielding, which is made up of a combination of standard concrete block and high-density concrete block that contains an iron ore fill called ilmenite.

Says Pendzick, "Most of the AGS blocks use ilmenite, which has to be shipped down from Canada. One of our designers, Robert Marascia, came up with the novel idea of crushing old AGS blocks to recover the ilmenite."

As he explained, because the ilmenite is extremely hard, when the concrete was crushed, the ilmenite was left behind. Then it was delivered to a concrete manufacturer, who simply added concrete to make new blocks.

Sophisticated RF Systems

To accommodate both high intensity protons and a wide range of heavy ion species, the Booster needs a sophisticated acceleration system. Critical to this system are ferrite-filled, radio frequency (rf) cavities, which will bunch particles together and accelerate them to higher energies.

The AGS Department's Booster RF Group, made up of technicians, engineers and outside consultants, is in charge of designing and building the rf systems. According to the group's head, Ralph Sanders, the Booster actually requires four rf systems. Two will be used specifically for accelerating protons, and all four will be needed to accelerate heavy ions.

The two proton systems are the most powerful ever designed at Brookhaven, "and probably in the world," says Sanders. The other two systems are patterned after the one used now in the AGS to accelerate heavy ions.

A big challenge has been to get all the hardware to fit in the Booster tunnel. "We're very short on real estate, so the designs have had to be compact," Sanders comments.

The challenges presented by the proton systems required the construction of a prototype. Says Sanders, "Since we had never built anything before in this range of voltage or power, we had to use some new design concepts."

The group began assembling the prototype in April. "When you build a prototype, it means you're 99 percent sure you know what you're doing," says Sanders. "But you need a final proof of principle." That will come when the group completes a comprehensive series of tests over the next several months.

300-Foot Telescope Collapses at NRAO

With no warning and for no immediately discernible reason, the 300-foot radio telescope at the National Radio Astronomony Observatory (NRAO) collapsed on November 15.

The 300-foot instrument, along with the 140-foot, fully steerable radio telescope and a three-telescope interferometer system, is operated by NRAO at its Green Bank, West Virginia, site. NRAO also has a radio telescope at Kitt Peak, Arizona, as well as the 27-antenna Very Large Array in Socorro, New Mexico. Further, NRAO is in the process of building the Very Long Baseline Array, consisting of ten telescopes, eight sited on the continental U.S. and one each in Hawaii and the Virgin Islands.

These telescopes are tools with which radio astronomers can study the universe, by collecting and measuring the radio waves that come from many kinds of astronomical objects.

NRAO is often referred to as BNL's sister laboratory, since both institutions are managed by Associated Universities, Inc. (AUI). Since 1955, AUI has managed NRAO for the National Science Foundation (NSF).

Two committees have been appointed to determine what transformed the working 300-foot radio telescope into a twisted mass of metal. With an instrument such as this, AUI Vice President Jerome Hudis pointed out, "There are not too many places things can go wrong, so they'll look most closely at the moving parts."

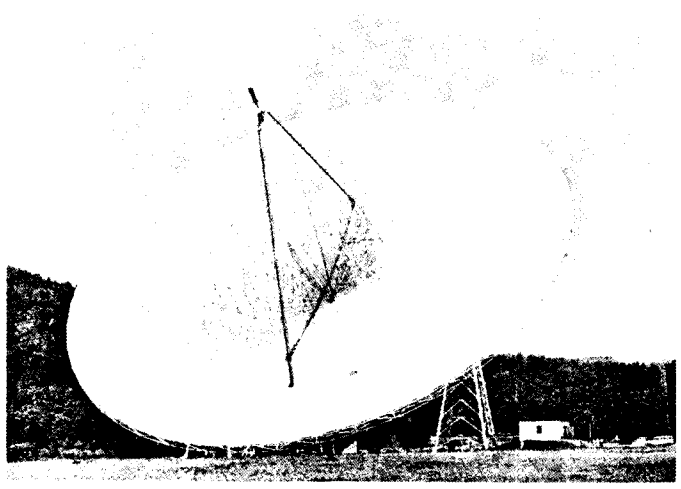
An internal committee made up of people from NRAO's headquarters at Charlottesville, West Virginia, and those involved with the telescope at Green Bank will report their findings to NRAO Director Paul Vanden Bout. An external committee is being jointly appointed by the NSF and AUI will report to AUI President Robert Hughes and the NSF.

A third committee composed of users of the instrument is meeting today at Green Bank, to discuss the scientific implications of the loss of the telescope and what plans should be made to compensate for it.

The 300-foot instrument, which began operating in 1962, was the world's largest movable radio telescope. To collect the radio signals emitted by astronomical objects at wavelengths as short as 21 centimeters, the telescope's giant dish pivoted around an axis in a north-south direction and depended on the Earth's east-west rotation to cover the sky.

Because its 300-foot diameter offered so much gathering power, researchers could use it in initial searches for interesting radio emitters. Most recently, it was being used to make detailed whole sky surveys at different wavelengths.

"All in all," said Hudis, "it was still a very valuable telescope, well used by a good-sized community."



The 300-foot telescope in 1963.

The twisted wreckage that was the 300-foot telescope.

Coming Up

Thomas B. Cochran, Senior Staff Scientist with the Natural Resources Defense Council, will present an AUI Distinguished Lecture on Tuesday, December 13. He will discuss "Private Arms Control in Verifying a Nuclear Test Ban," beginning at 4 p.m. in Berkner Hall. Refreshments will precede the lecture, at 3:30 p.m. in the Berkner lobby.

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Biophysicist **Venki Ramakrishnan**, Biology Department, will deliver the next Brookhaven Lecture on Wednesday, December 14. His talk on "How DNA Is Packaged in the Cell" will begin at 4:30 p.m. in Berkner Hall.

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America's premier piano quartet, the **Los Angeles Piano Quartet**, will present a concert in Berkner Hall on Wednesday, December 14, at 8:30 p.m. Tickets will be available at the door at $9, general admission; $6, students and those over 65; $5, those under 18.

Clarification

A story in the last issue of the Bulletin gave the impression that electron beam ion sources are required for BNL's proposed Relativistic Heavy Ion Collider (RHIC). In fact, the negative ion source at BNL's Tandem Van de Graaff accelerator is already producing heavy ion beams of the intensity needed for RHIC, including a pulsed, negative gold beam that has a peak intensity higher than that specified for RHIC's design luminosity.

AGS Upgrades (cont'd)

overhaul of ring equipment, and to the enlargement and modernization of the main control room.

From C-W to RFQ II

The new radio frequency quadrupole (RFQ) preaccelerator is the second to be installed at the AGS, so it has been dubbed RFQ II. Its first day on the job will be January 2, 1989, when it will relieve the one remaining Cockcroft-Walton (C-W) preaccelerator of its duty. So, during the month of December, RFQ II is being commissioned.

Up to now, two C-W's have preaccelerated particles for the AGS. The original, which served from 1960 to 1970, was kept as a spare since the second came on line and became the main preaccelerator.

The two C-W preaccelerators handled the whole AGS experimental program until 1984, when the then new, polarized proton program required the commissioning of RFQ I — a low-intensity, 750-thousand-electron-volt (keV) preaccelerator.

With the success of the first RFQ, it was decided to replace the main C-W with RFQ II, which was fabricated by Lawrence Berkeley Laboratory. Though both C-W's could still perform their duty, "Their long-term performance was too uncertain and finding replacement parts for them became so difficult," explains Sluyters.

So, the main C-W was disassembled last summer. Therefore, when the AGS came back on line, preacceleration duties were handled by the original C-W.

Because of their history, one of the C-W's may be reassembled for display at the BNL's Exhibit Center, while the other unit will be used for the time being as a backup to the RFQ II.

Chop Chop

The new, 1.6-meter-long RFQ II does not require a three-story room of its own as each C-W needed. With the RFQ II in line, there is also ample space to fit a fast-beam chopper into the 35-keV beam-transport line between the new, rotational symmetric, negative hydrogen ion (H^-) source and the RFQ II preaccelerator.

The fast-beam chopper does just what its name says: It chops the 35-keV pulses of beam into packets that are in phase with the radio-frequency acceleration system within the AGS ring. It was invented and built by Michael Brennan and John Brodovski.

Before, continuous pulses of 35-keV beam from the H^- source were injected into the old C-W preaccelerator and on into the AGS.

Now, within the 35-keV beam transport line, the fast beam chopper bunches the beam before it is preaccelerated in the RFQ II. Thus, the chopper eliminates the high-energy beam losses that previously occurred in forming the stable beam bunches in the AGS.

Riding the Wave

So that less beam will be lost as it passes through the transition energy of 8.5 GeV, a high-frequency dilution cavity was also installed, in straight section G-20 of the AGS ring.

Below 8.5 GeV, particles in each bunch ride on the front of the radio frequency wave within the AGS that accelerates the particles. Above this energy, the effects of the relative change of radius and velocity cause the particles to ride the back of the wave.

However, in making the front-to-back transition at 8.5 GeV, the particles tend to bunch too densely together, causing the high-intensity beam to become unstable. To make this transition without losing any beam, the dilution cavity spreads out the particles in each bunch by injecting noise into the ring.

The principle builders of this device were Michael Brennan, Peter Cameron, Michael Goldman and Ralph Sanders, who are in the Radio Frequency Group headed by Andrew McNerney.

Under Pressure

Spaced along the AGS ring are 240 vacuum pumps — ion pumps exhausting air and other noncondensible gases from the AGS ring so that it can operate at the subatmospheric pressure of 10^{-7} torr.

However, vacuum pressures as low as 10^{-9} torr are needed to reduce high-intensity, proton-beam instabilities and to minimize the losses of ion beams heavier than silicon. To achieve this vacuum, new pumps, chambers, valves, seals, clamps, instrumentation and controls are needed.

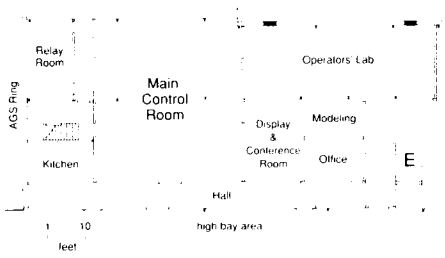
Towards reaching the goal of 10^{-9} torr by 1990, each pump was hooked up to its own power supply and control line to the Apollo computer controlling the pumps' operation. This undertaking was performed by John Gabusi and the Power Supply Group, headed by Jon Sandberg, and the Vacuum Group, headed by Kimo Welch.

Overhaul & Under Control

"Since the installation of the first cable in the AGS over 30 years ago, many devices have come and gone, but many of the cables and equipment associated with them have remained," says Sluyters. So, an overhaul of the ring was begun during this shutdown and is expected to be completed in 1991.

Supervised by head mechanical engineer Eugene Jablonski and by Michael Zguris, the overhaul crew will remove unused cables and equipment, replace obsolete and damaged equipment, improve the plumbing and electrical systems, clean and paint, etc. So far, a sixth of the ring has been overhauled.

Coordinated by Peter Ingrassia, who heads the Operators & Coordinators Group, enlargement of the main control room was also begun this shutdown. To be ready for fall 1989, the expanded main control room will be



70 percent bigger than previously: It will have space for five control stations, with separate racks for control and monitoring systems. A new conference room adjacent to main control will have a display of AGS operational data, so as to keep traffic out of the control room.

Concludes Sluyters, "The new devices that were installed during this shutdown should all be commissioned by the second quarter of fiscal year 1989 — giving the AGS a good chance of reaching record beam intensities and lower beam losses during the year." — Marsha Belford

Focusing on Accelerator Physics

During the summer shutdown, the focus at the Alternating Gradient Synchrotron (AGS) was on improving the accelerator. But a group of about 60 physicists and engineers also focused on improving their knowledge of accelerator physics, by attending an intense, two-week series of lectures presented by Alessandro Ruggiero in September, on "The Principle of Transverse Focusing in Particle Accelerators."

Transverse focusing means keeping the particle beam confined within the vacuum chamber, along the main direction of motion. One example of how to achieve this is with alternating gradient, or strong focusing — the magnetic arrangement first used in the AGS.

Roger Stoutenburgh

Alessandro Ruggiero

Ruggiero, who heads the Accelerator Physics Division in the Accelerator Development Department (ADD), explained that the purpose of his talks was "to help people understand why we are building accelerators in this particular way."

As noted by Edward Bleser, AGS, who was involved with arranging the lectures, Ruggiero succeeded. "This material had not been readily available in a coherent, straightforward way before, though it is fundamental to the accelerator business," Bleser explained. "Ruggiero's presentation was very solid and in depth, presented elegantly and nicely, so it was very understandable and kept the attention of all the attendees, who ranged from newcomers to experts in the field of accelerator physics, from many departments, including ADD, the AGS and the National Synchrotron Light Source."

This internal education effort, a joint venture between ADD and AGS, is expected to continue next summer with a similar series of in-depth talks on another important topic.

Food Drive Follow-Up

The first monthly food drive held at BNL was a huge success. Nineteen 32-gallon containers filled with 1,680 pounds of food were collected in November. Food drive chair Carole Kerr thanks everyone who contributed food for distribution to Brookhaven Town residents in need. She also offers a reminder that the next food drive will take place the third week in December, beginning December 12.

In Memoriam

Senior Technical Specialist **Robert Heimerle,** the first BNL employee to undergo a heart transplant, died on Friday, November 18, after rejecting the heart of a 14-year-old girl that he had received on August 10. He was 37 years old.

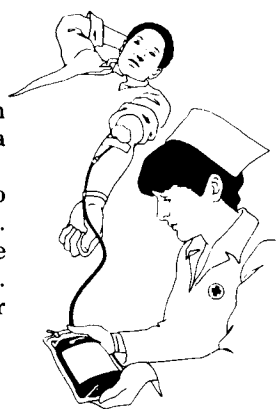
Heimerle began his career at BNL in May 1980, as a senior technician at the Alternating Gradient Synchrotron (AGS). After a four-month hiatus from the Lab, he returned in September 1982, as an AGS principal technician. In October 1986, he switched to the Accelerator Development Department and was promoted to Senior Technical Specialist.

In March of this year, Heimerle was infected with a virus that diseased his heart muscle, making him a candidate for transplant surgery. His transplant was carried out at the Latter Day Saints Hospital in Salt Lake City, Utah, where Heimerle remained for out-patient care until his death.

Heimerle was buried on Tuesday, November 22, at the St. James Roman Catholic Church in Setauket. He is survived by his wife, Marion Heimerle, AGS Department, and his father and mother, Robert and Marie Heimerle of Setauket, as well as four sisters: Janet Heimerle of Syracuse, JoAnn Riggio of Huntington, and Nancy Heimerle and Maria Heimerle, both of Setauket.

Contributions to the Heimerle Heart Fund, an account that Heimerle's coworkers set up at the Barclays Bank branch on site to help cover the Heimerles' non-medical expenses associated with Robert's transplant, will be accepted until the end of the year. Any funds remaining will be donated to the Latter Day Saints Hospital in Heimerle's memory.

Circulate Your Blood



A two-day blood drive will be held at the Lab on December 21 and 22 — so, blood donors should draw a rolled-up sleeve on their calendars for those days.

Two pledge cards are being sent to each employee so that friends or relatives may join the BNL campaign. Please sign up as soon as possible. If you need any more information, call Susan Foster, Blood Drive Chair, Ext. 2888, or contact the Blood Program Captain for your department or division (see list below):

Dept.	Bldg.	Captain	Ext.
ADD	1005	Patricia Webster	4628
	902A	Cynthia Fridrich	5459
AGS	911A	Richard Skelton	7520
AUI	134A	Elliott Levitt	2495
Bio.	463	Richard Sautkulis	3386
Chem.	555A	Sophie Kostuk	4302
CCD	515	Bridget Ramos	7796
CSD	903	Al Campbell	2043
	462U	Christine King	7725
	462A	Frank Monroig	4986
	479	Frank Flegar	3499
DAS	179A	Pat Taylor	2452
	526	Peter Fallon	3043
	815	Betty Ivero	2208
	480	Jim Hurst	3844
	426	Maggie Marsch	3275
	475	Arlean VanSlyke	2387
	318	Judy Giordano	3051
	120	Sharon Zuhoski	3359
	51	Flo O'Brien	2265
DCP	355	Jack Russell	3164
DNE	130	Kathy Nasta	2267
	475B	Arnie Aronson	2606
	129	Barbara Apuzzo	2746

Dept.	Bldg.	Captain	Ext.
DO	134	Janet Sillas	2345
DOE	464	Claire Gash	3438
Fisc.	134A	Dot Scheffer	2323
Inst.	535B	Patrick Gilleeny	2836
Med.	490	Peter Heotis	2304
MIS	459	Bob Kaszuba	7785
NSLS	510E	Lynn Kelly	2297
	725B	Pat Harlin	4828
PE	134C	Ove Dyling	5297
	452	George Elias	4669
	326	Lee Grimes	3084
	422	Bruce Laakman	5316
Pers.	185	Marsha Kipperman	2871
P&GA	197B	Jack Laurie	7640
Phys.	901A	Sandy Asselta	4550
	510A	Liz Mogavero	3940
Reactor	750	Randi Vogtr	4043
SS&SD	50	Pat Cahill	2740
SSD	179B	Joan Perullo	2549
	179B	William Webster	2525
TID	477A	Pat Campbell	3484

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team safety

In this week's Team Safety program report there's again more good news than bad.

The bad news is that the Plant Engineering Electric Shop Team, which was a first-time winner on November 10, was sent back to the showers in their quest for a second win with a twisted leg on November 17 that has so far resulted in five days' lost time.

The good news is that all other teams are continuing their no-lost-time-accident records, and, as of November 28, there were three second-time winners. The Plant Engineering Teams from Roads and Grounds, the Heavy Equipment Shop and the Steam Shop are the first to double and have not had a lost-time accident since the program started. Great job, teams!

Additional good news is that the Team Safety program is beginning to have an impact on the Lab's overall accident record. Since June, lost-time accident cases have been reduced significantly in the divisions participating in the progam.

Service Awards

The following employees received service awards during the month of October.

Forty Years

Lewis M. Friedman ..... Chemistry

Thirty-Five Years

Lloyd A. Schairer ..... Con. & Proc.

Thirty Years

Michael Iwantschuk ..... AGS
Walter R. Kane ..... Nuc. Energy
Walter M. Reams ..... App. Science
John H. Sondericker ..... Accel. Dev.
Brian C. Vogt ..... Accel. Dev.

Twenty-Five Years

Frederick B. Heilemann ..... AGS
Jeffrey L. Knighton .. Photo.& G.Arts
Bernard J. McAlary ..... Dir. Off.
Dominick Salimando ..... AGS
Dieter Zantopp ..... Accel. Dev.

Twenty Years

Gregory P. Bagley ..... Accel. Dev.
George A. Hughes ..... S&EP
William H. Maston ..... S&EP
David C. Rorer ..... Reactor
Booker T. Washington ..... Plant Eng.

Ten Years

Thomas S. Dickinson ..... NSLS
Jack S. Feldman ..... NSLS
Toni Hoffman ..... NSLS
Garfield Hawthorne ..... Staff Serv.
Martin J. Leach ..... App. Science
Ruth Ann Lutz ..... Dir. Off.
Robert J. Malachowsky ..... S&EP
Lois Marascia ..... Nuc. Energy
Claudio Pellegrini ..... NSLS
Joseph C. Roecklein ..... AGS
Kenneth Sullivan ..... Nuc. Energy
Gregory J. Van Tuyle .... Nuc. Energy
Kevin B. Yachnik ..... Plant Eng.

The following employees received service awards during the month of November.

Forty Years

Robert M. Brown ..... App. Science

Thirty-Five Years

J. Keith Rowley ..... Chemistry
Sylvia Springhorn ..... Biology

Thirty Years

Calvin H. Brewster ..... Nuc. Energy
Henry C. Grahn ..... Dir. Off.
Donald L. Kazmark ..... AGS
Donald R. Mackenzie .... Nuc. Energy
William A. Patton ..... AGS

Twenty-Five Years

William L. Cahill Jr. ..... NSLS
Alyce M. Daly ..... Nuc. Energy
William A. DeCaro Jr. ..... AGS
Edward J. McFadden Jr. ..... CCD
Myron Strongin ..... Physics

Twenty Years

Warren S. Hirzel ..... Accel. Dev.

Ten Years

Kathleen M. Barkigia .... App. Science
Bruce G. Gibbard ..... Physics
Heather L. Hartmann ..... AGS
Kenneth J. Licata ..... S&EP
William J. McGahern ..... AGS
Robert S. Meier ..... Accel.Dev.
H. Bruce Stewart ..... App. Science

Retirement Notes

Since retiring in 1970 from his position as the Lab' Technical and Public Information Officer, Dennis Pul ston has centered his activities around his life-long fascination with the natural world.

Shortly after his retirement, he began serving as a naturalist on various ecological expeditions. In that capacity, he has traveled 29 times to the Antarctic and made numerous trips to the Arctic, including the one aboard the *Lindblad Explorer* that marked the first trip of a cruise vessel through the famed Northwest Passage.

Between trips, Puleston wends his way back to his home on Long Island, where he has always found the birds and plants as fascinating as those that live in more exotic climes. Over the years, in fact, Puleston has painted a collection of watercolors of the bird species that occur here. Recently, limited edition offset lithographs of six of Puleston's paintings were released. These include the Belted Kingfishers pictured here. These prints and ordering information can be viewed in a private display on the bulletin board in the BERA Sales Office.

To Your Health

Benefits Overview

Did you know that, on average, your employee benefits are worth $15,000 per year? This and other facts about benefits will be discussed by Richard Schonberg, manager of compensation and benefits in the Personnel Division, in the next Health Promotion talk, "An Overview of Employee Benefits." The talk will be given on Thursday, December 8, at noon, in Room B, Berkner Hall.

SOS

Ex-smokers are welcome to join one of the four, free Stay Off Smoking (SOS) support groups around Long Island, sponsored by the American Lung Association (ALA) of Nassau-Suffolk.

Monthly meetings are held at the Riverhead Free Library on the first Wednesday of the month, 7-8:30 p.m.; the Community Health Plan in Hauppauge on the second Monday, 7:30-9 p.m.; Connetquot Library, Bohemia, second Wednesday, 7:30-9 p.m.; Massapequa General Hospital, Seaford, third Monday, 7-8:30 p.m.

For more information, call ALA at 231-LUNG.

Macintosh Featured At Computer Center

The Lab's exclusively approved Apple computer dealer, Custom Computer Specialists Inc. (CCS), has opened a Macintosh Computer Center on site, in the Computing & Communications Division, Bldg. 515.

The purpose of the computer center is to supply and assist BNL with the Apple line of Macintosh products. Robert Carlson of CCS, who has been assigned full-time to the computer center, will discuss the Macintosh products and help users design systems that best suit their needs. The center is equipped with a functional Macintosh network system for demonstrating the products' capabilities.

The computer center is open weekdays from 8 a.m. to 5 p.m. in room M121, Bldg. 515. The office number is Ext. 3895; in an emergency, Apple users can call the CCS main office in Hauppauge at 582-6699, Ext. 900.

In addition to the Macintosh Computer Center, CCS will offer a discount purchase program for all BNL employees, as well as a continuing series of seminars. Details about the first three seminars, which will be held the week of December 12, will appear in next week's Bulletin.

Film badges will be changed tomorrow. Please place your badge in its assigned rack space before leaving work today.

Hospitality News

Lucy Liu, a noted artist from the People's Republic of China, will be the guest speaker at the next Hospitality Committee get-together on Tuesday, December 6, at 9:30 a.m., in the Brookhaven Center. She will demonstrate the techniques of elaborate and impressive styles of Chinese painting with ink on rice paper. She also will have a display of some of her Oriental and contemporary paintings.

Please join us for this interesting presentation. Spouses of Lab employees and guests are invited. Bring the children; babysitting will be provided free of charge. Coffee, tea and danish will be served; juice and cookies will be provided for the children.

Note to Employees:
Attendance at lectures, meetings and other special programs held during normal working hours is subject to supervisory concurrence.

Social Club

The Social Club will have a repeat showing of the Switzerland tour film on Wednesday, December 7, in Berkner Hall, Room B, at 12:05 p.m. Bring your lunch and enjoy the scenery. For more information, call Doris Terry, Ext. 7610.

Choral Group Concert Rehearsals

It's not too late to join the BNL Choral Group in their preparation for a Christmas Concert, to be given in the Cafeteria during lunchtime on Wednesday, December 21. Rehearsals for this concert will be held on the following Tuesdays and Thursdays in the North Room of the Brookhaven Center: December 6, 8, 13, 15 and 20.

Each rehearsal will begin at noon sharp and is expected to last half an hour. All parts are needed, so please join us. For more information, call John Weeks, Ext. 2617, or Janet Sillas, Ext. 2345.

Bowling

Red/Green League

R. Mulderig bowled a 268/214/667 scratch series, A. Pinelli 236, D. Jesaitis 215, N. Combatti 211, C. Bohnenblusch 210, E. Sperry IV 209, H. Dawson 206, F. Griswold 205, J. Morris 205, W. Powell 204, H. Marshall 203, P. Ouvrard 202, H. Arnesen 200, R. Jones 200, C. Scarlett 200.

White League

Ed Sperry IV rolled a 246, Bob Jones 202, Mary Grace Meier a Dutch 200, Nancy Erickson 190, Kay Conkling 181.

Purple League

Rob Simes had a 202, Caryl MacDougall 200, Clem Auguste 201, Maria Apelskog 185.

PSI Holiday Social

The Upton Chapter of Professional Secretaries International invites the Lab community to meet with secretaries and other professionals at our annual holiday social, to be held Tuesday, December 6, from 5:30 to 9 p.m. at the Recreation Building. Enjo; a pleasant evening socializing ano tasting an array of goodies. The cost is $4 per person. For more information, call Sharon Jones, Ext. 2493.

In time for the holiday season, PSI will be collecting nonperishable items for the Brighter Tomorrows Women and Children Shelter. For information, please call Sheryl Carey, Ext. 5384.

Volleyball

Standings - Week of November 21

League I		League II	
Upfagrabs	13-2	Nuts & Bolts	16-2
Xrayted	13-2	Fossils	13-5
Dinkers	13-5	Set-Ups	13-5
Cannonballs	6-12	Krush	11-7
Phoubars	4-14	Slammers	7-11
Netminders	2-16	Ziegfield Vollies	6-12
		Chunga's Revenge	3-15
		Upton-Ups	3-15

League III		Open League	
Frazzled	15-0	Dig Your Lips	12-3
MISfits	10-5	Tom's Mutants	10-5
Sourcerers	10-5	Meriem's Team	10-2
High Volley'em	7-8	Phoenix	9-3
Printouts	6-9	Magnum	7-
Spikes	6-9	Vollies	5-1ι
Good Timers	3-12	Rowdy Radicals	4-11
Renegades	3-12	Pi Chu	3-9
		Constables	0-12

Runners' Corner

Experienced marathoner Wen-Shi Yu led a BNL contingent of five women to take second place in her age group at the 1988 New York City Marathon, on November 6. The four other women representing BNL all set personal records, as each ran their first 26.2-mile race. Their times and placings among women were:

	Time	Place
Wen-Shi Yu	3:19.31	111
Nicole Bernholc	4:25.03	1753
Joan Congemi	4:25.11	1759
Marilyn McKeown	5:46.54	3595
Ronnie Evans	5:55.59	3653

Three BNL men age 40 and above competed as the first BNL masters running team, in the Syosset Sprint 5-kilometer race on November 19. With a combined time of 53.36, team members Ed Gallagher, Jerry Hastings and Mel Cowgill placed second to the strongest and oldest masters tear on the Island, the Cherrywood Masters.

Individual finishers included BNL'ers Russ Tonkyn, with a 16.33, for a second in his age group, and Don MacKenzie, with a 18.53, for an age-group first.

See Supplement for additional notices and classified ads.