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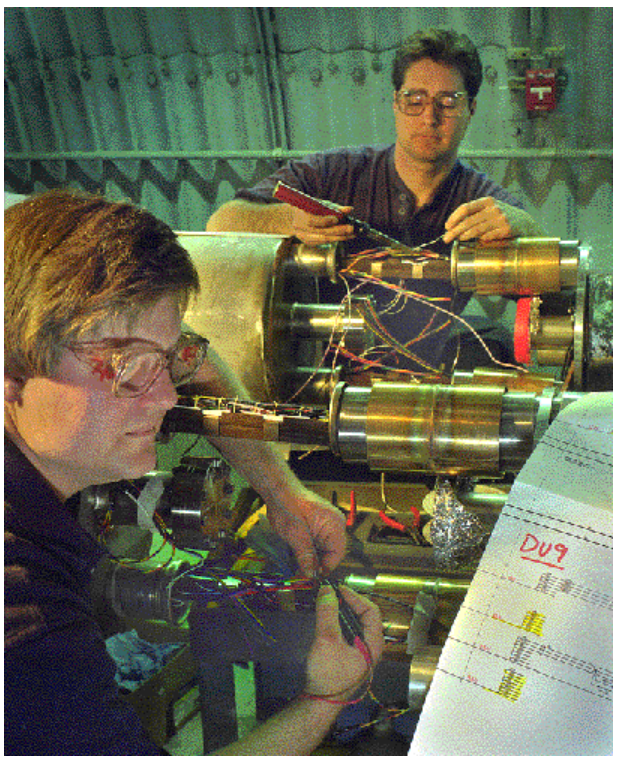
BROOKHAVEN NATIONAL LABORATORY

Countdown to Commissioning: A Look at Recent RHIC Events

Step-by-step the pieces are coming together: A final magnet connection. A key component of a massive detector. Critical support from collaborators both near and far.

These aspects of BNL's Relativistic Heavy Ion Collider (RHIC) described in this issue of the Brookhaven Bulletin are but a few of the many factors that will converge at RHIC's commissioning in mid-1999, when this unique accelerator starts operating and gives physicists a new tool in their quest to understand the earliest moments of the universe.

Another RHIC Milestone — Electrical Interconnects Complete For Arc and Insertion Magnets



Greg Heppner (left) and Joe Gormley work on the last electrical interconnect of the 8-centimeter Arc magnets in the RHIC tunnel.

When it is completed in 1999, BNL's Relativistic Heavy Ion Collider (RHIC), which is supported by the U.S. Department of Energy (DOE), will be the world's largest superconducting accelerator for producing high-energy collisions of two beams of heavy ions — the atomic nuclei of heavy elements such as gold. With these collisions, scientists hope to recreate the conditions of the very early universe, looking backward in time to understand the relationships between the fundamental constituents of matter.

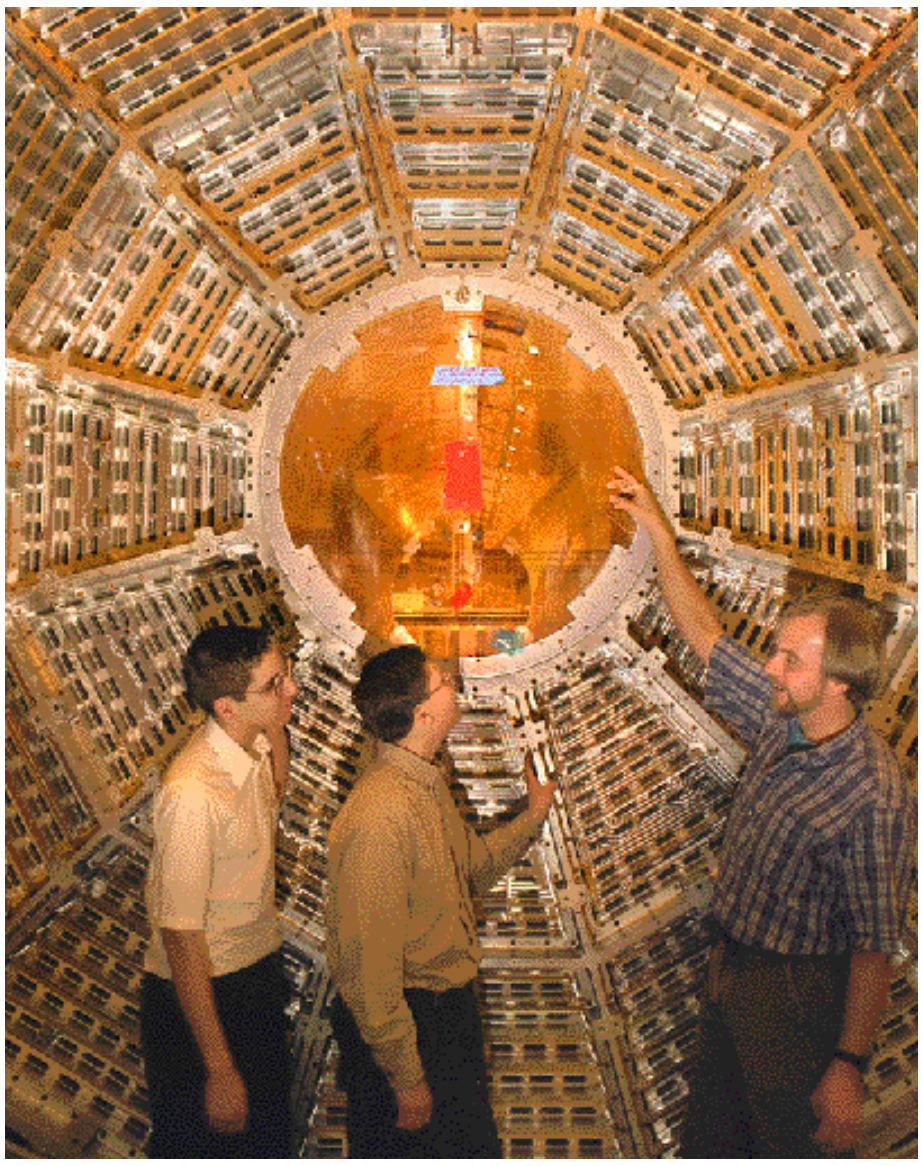
The heart of the RHIC machine, 1,700 huge magnets divided between two concentric rings, requiring over 3,000 kilometers of superconducting material, is enclosed in an underground tunnel 3.8 kilometers (2.4 miles) in circumference.

Although RHIC is so immense, it is built of details. The finished magnets look singular and sleek, but each one is an almost incredibly complex, yet orderly combination of hundreds of components of iron, steel and other materials. Each piece is needed in its own particular design and position to create the invisible power of the accelerator: the magnetic field that guides and focuses the particle beams on their way.

On March 25, the Bulletin received a phone call. "In two days, we'll be finishing the last electrical interconnect of the RHIC Arc magnets," reported George Sintchak, RHIC Electrical Testing Project Engineer. "It's quite a milestone — the last interconnect between the 864 Arc and Insertion magnets that we started installing in June 1995. Do you want a photograph?" By 9:30 a.m. two

(continued on page 2)

STAR in Their Eyes



Standing at the end of the Time Projection Chamber for the detector for STAR (see story on page 2), one of the two main experiments being built for RHIC, Associate Physicist Bill Christie (right), who serves as the liaison between STAR and RHIC, explains the workings of this giant apparatus for detecting tiny interactions to students Nicholas Greco (left) and Andrew Oko of Oceanside High School, during their "1-to-1 mentoring" visit to BNL in March (see story on page 3).

— Photos on this page by Roger Stoutenburgh

DOE Announces Complex-Wide Policy of 'Zero Tolerance' For Life-Threatening Injuries, Major Environmental Contamination

In an effort to make a dramatic improvement in environment, safety and health (ES&H) throughout the U.S. Department of Energy (DOE) complex, Secretary of Energy Federico Peña announced a new DOE safety initiative on April 14 — a "zero-tolerance" policy for serious accidents that result in life-threatening injuries or major environmental contamination. Any event that violates this policy will result in a personal Secretarial review.

"It has been and will remain our policy that the safety of our workers, respect for the environment, and the public health are paramount in all that we do," said Peña in a memorandum to all DOE and contract employees introducing the zero-tolerance policy. "At stake are nothing less than the lives and livelihood of our workers and neighbors and a healthy environment to leave to our children."

As employees of Brookhaven Science Associates (BSA), which manages BNL for DOE, people employed at the Laboratory are contract employees of DOE.

Said BNL Director John Marburger, who is also President of BSA, "Our company was formed specifically to manage BNL in a new era of safety-consciousness within DOE. Secretary Peña's reemphasis of the Department's commitment to safety management is a message we heard throughout the procurement process. It is built into our proposal and into the very philosophy of BSA itself.

"BSA shares Secretary Peña's policy of 'zero tolerance' for serious accidents and welcomes the opportunity to work directly with the Secretary to make the policy effective," Marburger concluded.

Among other things, the safety initiative commits DOE to outstanding ES&H performance, endorses continued implementation of integrated safety management (ISM) as the key to improved safety performance, and expands ISM implementation from 10 priority sites to the entire DOE complex.

As stated in the Secretarial Policy Statement on Environment, Safety & Health, "The fundamental premise of ISM is that all accidents are preventable through close attention to work design and hazard control, and with substantial worker involvement in teams that plan work and select appropriate safety standards. Experience has shown that an investment in prevention brings not only a healthier workplace and a cleaner environment, but notable cost-savings as problems are addressed before they become costly accidents or injuries."

Another commitment is to foster a work environment that allows free and open expression of safety concerns, where workers fear no reprisals or retaliation. "Workers are our most important resource for preventing and reporting hazards and potentially unsafe practices," the policy notes.

To assure its implementation and its becoming an integral part of the way work is done at DOE, the policy announces:

• the formation of a Safety Management Leadership Forum in which senior DOE managers and contractors will examine and address the major ES&H vulnerabilities at DOE sites and discuss the status of ISM implementation.

• accountability-in-management contracts, to ensure that DOE contracts make clear to its contractors that the department expects excellent safety performance as a matter of course, both for the contractors' employees as well as subcontract employees, consistent with ISM principles. Under these contracts, an effective ISM is a fundamental requirement of performance, and DOE has the ability to put the contractor's entire performance-based fee at risk where it is warranted by poor safety performance.

The full text of the new policy is available on the World Wide Web at http://tis-hq.eh.doe.gov.

Countdown to RHIC Commissioning (cont'd.)

PHENIX Rising

Roger Stoutenburgh

Inspecting the South Muon Magnet and detector carriages in the Experimental Hall for PHENIX — the Pioneering High Energy Nuclear Interaction Experiment at RHIC — are (front, from left) Naohito Saito, Yuji Goto, Steve Mulhall; (ground level, counterclockwise from left) Pat Meehan, Donna Earley, Yasushi Watanabe, Deborah Kerr and Brant Johnson. The Central Magnet and North Muon Magnet can be seen in the background.

RHIC Milestone (cont'd.)

days later, photographer Roger Stoutenburgh of the Information Services Division was down at the DU9 interconnect in Sector 7, one of the curved parts of the RHIC tunnel where the Arc magnets are placed.

There, he found and photographed Joe Gormley and Greg Heppner as they worked and tested the last electrical connections to be completed before the job was ready for welding. Together with Scott Bell and team leader Richard Meier, the other "Tunnel Rats" as the group is informally known, who were working elsewhere in the ring, Gormley and Heppner have installed all the 864 interconnects, with the direction of Technical Supervisor Scott Seberg, who is in charge of coordinating vacuum, welding and electrical interconnections. The Tunnel Rats, who were all experienced BNL magnet builders, joined the Ring Installation Group to start the interconnects in 1995.

Sintchak explained that the 8-centimeter superconducting Arc magnets contain an 8-centimeter-diameter beam hole and include magnets called dipoles; CQS, or corrector, quadrupole and sextupole magnets; and a few DU assemblies, which are dummy assemblies that, where a magnet is not needed, serve to continue the electric, cryogenic and vacuum systems and the 8-centimeter beam tube. The magnetic field of the Arc magnets will keep the bunches of particles in the beam in position and focused as they accelerate around the ring.

"How about some numbers?" asked Sintchak. "If you're counting the electrical connections, for example, there are 43 per interconnect between a CQS and a dipole — that's approximately 37,152 connections, and every one has to be perfect."

Gary McIntyre, Installation Section Head for RHIC's Ring Systems Group, produced some other numbers. "Once the electrical connections are complete and tested, the interconnects are leak checked, insulated and closed. Each interconnect requires 22 separate welds," he said. "For the 8-centimeter Arc and Insertion magnets, that's over 40,000 feet of weld." McIntyre was expecting the mechanical part of the installation to be completed in about a month.

"The completing of the 8-centimeter Arc and Insertion interconnects is evidence of the tremendous effort given by those working in the tunnel," McIntyre continued. "This is not limited to just the Installation Section, but also includes the Vacuum, Magnet Electric, Cryogenics and Beam Instrumentation Sections. Every one of these sections performed tasks that had to be integrated into the 8-centimeter region, each in timely fashion. Though much work is left to be done, the reaching of this milestone is a reflection of the teamwork seen throughout this Project."

— Liz Seubert

HazWoper Training

A free, 40-hour HazWoper training class will be offered on site Monday to Friday, May 4-8, 8:30 a.m. to 5 p.m., by Local 8-431 of the Oil, Chemical & Atomic Workers International Union. The course, which meets all DOE and OSHA regulations for environmental remediation work, will be limited to 20 employees. Call Lou Evers, Ext. 4417, for details and reservations.

Japanese Stakeholders Visit RHIC And RIKEN BNL Research Center

A special interest — that of stakeholders who support with funding major initiatives of BNL's Relativistic Heavy Ion Collider (RHIC) Project — brought Nobutaka Machimura, Japan's Minister of Education, Science, Sports and Culture, which is also known as MONBUSHO, and a group of Japanese government, science and education officials to the Lab in January.

The visitors had discussions with representatives of BNL, Brookhaven Science Associates and the U.S. Department of Energy.

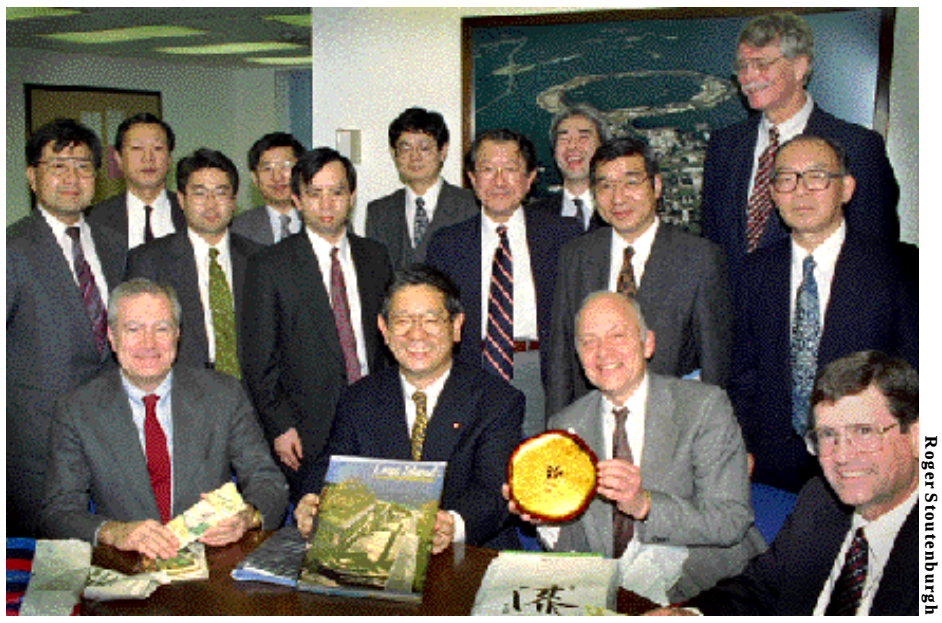
In addition, they were taken to see the RHIC tunnel, together with the experimental hall of RHIC's PHENIX detector and the PHENIX-RICH counter in Bldg. 832.

PHENIX, which, along with STAR, will provide the backbone of the RHIC experimental program, is partly supported by MONBUSHO funding.

These January visitors were followed in March by another very welcome special-interest stakeholder from Japan, Akira Nitta, Section Chief of the Research & Technology Division in Japan's Science & Technology Agency, which supports RIKEN in Japan and its international collaborations such as the RIKEN/BNL collaboration in RHIC spin physics — and the new RIKEN BNL Research Center with a world-class supercomputer.

Said Ozaki, "As we draw nearer to RHIC's completion, thanks to the landmark cooperation and collaboration between Japan and U.S., we can look forward to doing science much richer in content and much wider in scope at RHIC."

— Liz Seubert



Roger Stoutenburgh

Nobutaka Machimura (seated, second from left), Japan's Minister of Education, Science, Sports and Culture (MONBUSHO) led a group of Japanese government, science and education officials to BNL in January. The group also included Yasuyuki Akiba (standing, fourth from left), Financial Office of the U.S. Japan Collaboration in High Energy Physics, and Ken Kikuchi (standing, right), Director of the Japan Society for Promotion of Science, Washington Office. With the group are: (seated, from left) John Marburger, President of Brookhaven Science Associates and now also BNL Director; Peter Bond, then Interim BNL Director; and Dean Helms, Executive Manager of the U.S. Department of Energy's Brookhaven Group; as well as Satoshi Ozaki (standing, seventh from left), RHIC Project Head, and Thomas Kirk (back, right), BNL's Associate Director for High Energy & Nuclear Physics.

STAR Trek

Joe Rubino

All other cargoes at Gabreski Airport in Westhampton were upstaged when a six-ton, $10-million Time Projection Chamber (TPC), the world's largest tracking detector of its kind, was unloaded at 8:30 a.m. from a U.S. Air Force cargo plane last November 6. The detector was on its way to the Solenoidal Tracker at RHIC (STAR) experiment at BNL's Relativistic Heavy Ion Collider (RHIC) from Lawrence Berkeley National Laboratory in California, where it had been designed and built over the past four years by more than 90 people from nine institutions.

Protected by white weatherproof wrapping, the massive yet fragile detector, which measures 4.2 meters (nearly 14 feet) long and 4.1 meters (13.5 feet) wide, was transported at a snail's pace to BNL on a flatbed truck, escorted by Suffolk County Police highway patrol.

Reaching BNL by mid-afternoon, the TPC started a year-long phase of testing and installation as the heart of the house-sized STAR experiment, where approximately 400 scientists and engineers from 33 institutions and laboratories in the U.S. and six in other nations will conduct experiments when RHIC comes on line next year.

Equipped with 138,000 channels of highly sophisticated electronics (see photo on page 1), the STAR TPC will capture the thousands of particles that will be created at RHIC after each head-on collision of speeding ions.

After recording tens of millions of bytes of information in the aftermath of each collision, the TPC's detectors and computers will be able to go "backwards in time," to reconstruct the collision in three dimensions, allowing researchers to determine the identity of a charged particle and measure its production angle and momentum — an important step in the quest to understand a form of matter that has not existed since shortly after the Big Bang.

— Liz Seubert

They Handle Kids With Care

Parents of children enrolled at BNL's Child Development Center (CDC) have proclaimed today as "Care Giver Appreciation Day" — a day on which they will say thank-you to the CDC staff with a catered luncheon at the facility in the apartment area.

Child Development Center care givers include: (front, from left) Katrina Hester, Dawn Verni, Barbara Nazar, Carmen Fortugno; (back, from left) Jennifer Moorehouse, Jill Hickerson, Paula Meyer, Sharon Farina, Rita Gullottio, Melissa Fariello, Rebecca Warner and Kelly Murphy. Not pictured: nurse Barbara Brosshard, Lisa Farland, Jennifer Gangitano, Courtney Kelsey, Yan-Xia Liu, Stephanie Morgan. Jennifer Reynolds, Linda Rebentisch and Melissa Wilhemy.

Deborah Shurberg, a member of the current Parent Council, a parent group whose members rotate every six months, explained that the idea for the special day arose at a council session. When the council canvassed all the parents for contributions toward the dinner, she said, "We got a really wonderful response."

Shurberg, who works in the Department of Advanced Technology, is fairly representative of BNL parents who use the CDC. "My husband Karl and I have had our two children over there since they were three months old," she said, noting that her daughter Rachael is now almost one and her son Sam is three.

"They have just been so happy," she said. "The care givers there are wonderful. They do more than just take care of the kids — they love the kids. It's hard enough to leave your kids to go to work, but leaving them some place like this makes you feel better about it.

"I think most of the parents feel that way," Shurberg concluded, "so we wanted to say thanks. We can't always pay them as much as their work is worth to us, but at least this way they know that we appreciate the work that they do."

At the Child Development Center (CDC) are care givers: (front, from left) Megan Tennant, Kathleen Lennon, who is holding Casey Backofen, 19-month-old daughter of Kelly and Rick Backofen, Information Services Division, Michael Acevedo, CDC Director Deborah O'Neill, Melissa Zappavigna; (back, from left) Maribel Freire, Tricia Antonacci, Cheryl Banks, Sharon Rodriquez, Yvonne Reventlow and Shara Maso. **— Photos by Roger Stoutenburgh**

Each BNL workday, the CDC's 32, mostly full-time care givers watch over as many as 96 children, from three months to five years of age.

For more information about the Child Development Center, contact Susan Foster, Human Resources Division, Ext. 2888, or CDC Director Deborah O'Neill, Ext. 7416.

— Anita Cohen

Coming Up

At the next BERA Concert, on Thursday, May 7, at 8 p.m. in Berkner Hall, Pianist Justin Kolb will play Franz Liszt's piano transcription of Ludwig van Beethoven's Symphony No. 5. Kolb will also discuss such topics as Beethoven's political considerations in composing and Liszt's reasons for transcribing this symphony.

BNL Toastmasters Start Lunch Meetings

As of Tuesday, April 28, the BNL Toastmasters Club will begin holding lunchtime meetings on the fourth Tuesday of each month, at noon in Room A, Berkner Hall. The group also meets on the first and third Tuesdays, at 5:20 p.m., in Bldg. 463.

To kick off this new meeting time, a special interactive workshop on "How to Conduct Productive Meetings" will be presented next Tuesday by Ronnie Evans. Developed to meet the needs of those responsible for leading meetings, this Toastmasters' workshop provides formats and procedures to ensure that meetings, which can be vital communications tools, are well-planned, with clear goals and measurable achievements.

All are welcome, but prior registration is advised. For more information, call Ext. 2851.

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BNL Part of Mentoring Partnership

Scientist Jeffrey Coderre, Medical Department, shows students Michelle Sorenstein (left) and Anita Bosch of Half Hollow Hills High School the phantom — a plastic man filled with tissues and fluid — that he uses for research in boron neutron capture therapy, a brain-cancer treatment undergoing clinical trials in Medical.

Roger Stoutenburgh

In mid-March, eleven Long Island High School students had the opportunity to come to BNL to work one-on-one for the day with researchers in the Biology, Medical (see photo above) and National Synchrotron Light Source Departments, the Computing & Communications Division, and the Relativistic Heavy Ion Collider Project (see photo on page 1).

BNL was one of 200 Long Island organizations that participated in the learning-filled day offered by the 1 to 1 Long Island Mentoring Partnership and organized at BNL by Museum Programs of Community Involvement & Public Affairs.

Museum Programs Head Janet Tempel said, "The day was fabulous — an excellent experience for everyone involved, teachers, students and researchers.

"We will do it again next year and expand it," she added. "It's not too soon for interested people to get involved, so just give me a call at Ext. 4049."

Wanted: Farmers For Farmers' Market

Many BNLers and retirees look forward to Wednesdays in the growing season, because that's the time for the Farmers' Market in the parking lot behind the Science Education Center, Bldg. 438, 11:30 a.m.-1:30 p.m., rain or shine.

This year, market stalls may also be held by spouses or other relatives of BNL employees, and, in addition to farm produce, craft items may be sold. All vendors must be willing to make a commitment to keep to the advertised hours for the entire season, which runs from May 13 to mid-November.

Obtain application forms from Georgia Irving, Ext. 7957.

Applications will be granted on a first-come basis, so, if you want to have your grandmother's delectable blueberry pies or your uncle's succulent string beans and carrots hit the top of the BNL Farmers' Market sales, apply soon!

Equipment Demos

The LeCroy Corporation will host a product show on Tuesday, April 28, 9:30 a.m.-2 p.m., in Berkner Hall. On display will be the latest instrumentation, including programmable HV supplies, VME TDCs, FastCAMAC modules, and analog and color digital oscilloscopes. Stop by and pick up a copy of the 1998 LeCroy *Test & Measurement* catalog.

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On Thursday, April 30, from 9 a.m. to 2 p.m. in Berkner Hall, LNR Tool & Supply Corp., a distributor of mill supplies on Long Island will display equipment. Also present will be vendors from CRC Industries, makers of lubricants and sprays, and Cutler Industrial, which represents Royal products, Superior abrasives, Loc-Line products and Teco Tooling components. In addition, an assortment of standard and speciality cutting tools will be displayed.

March Into May: Half-Way Point

Five weeks have passed, bringing BNL's 345 March-Into-May participants to the halfway mark of the program. Now, it's time to add up activity points and report them to team captains. All participants will be included in the next raffle, to be held today.

Organized at BNL by the Health Promotion Program of the Occupational Medicine Clinic, March Into May is a 10-week physical activity program. BNL is one of ten employers nationwide chosen by the Centers for Disease Control and the National Coalition for Promoting Physical Activity for employee participation.

To calculate general trends in employee fitness, all BNLers — even non-participants of March Into May — received a survey to complete and return to Mary Wood, Bldg. 490. For a replacement form, call Wood at Ext. 5923.

Attention: Parents Of H.S. Students

Parents are advised that their advanced math and science students from local high schools who have completed their junior or senior year may apply now for BNL's Community Summer Science Program organized by the Educational Programs Office.

This year, the six-week program, which includes internships and lectures presented by BNL staff, will run from Monday, June 29, through Friday, August 7. May 8 is the deadline for applications, now available at the Science Education Center, Bldg. 438. Contact Louise Hanson, e-mail: hanson2@bnl.gov or Ext. 5849, for more information.

Amateur Radio

The BERA Amateur Radio Club will next meet at noon on Thursday, April 30, in Room D, Berkner Hall. All Lab employees, guests and licensed amateur-radio operators are invited to attend. For more information, call Chris Neuberger, Ext. 4160; or Nick Franco, Ext. 5467.

Service Awards

The following employees celebrated service anniversaries during April:

35 Years

David E. Cox.....Physics
Harold E. Gassner.....AGS
Werner Tramm.....AGS

30 Years

John R. Bennett.....Comp. & Comm.
M. Kay Dellimore.....Human Resources
Michael S. Makar.....Medical
Lonnie B. Muldrow.....Plant Eng.
Martin R. Van Lith.....Physics

25 Years

Guy A. Mastrion.....Human Resources
Suresh C. Srivastava.....Medical

20 Years

Anne S. Baittinger.....Legal Office
John Blydenburgh.....Admin. Support
Robert P. Browngardt.....Plant Eng.
Bruce S. Brunschwig.....Chemistry
Alfred L. Farland.....Central Shops
Carol L. Joyce.....Legal Office
Eugene R. Kelly.....RHIC
Thomas C. Nepsee.....Comp. & Comm.
Michael Schaeffer.....Plant Eng.
Toshifumi Sugama.....App. Science
Peter E. Vanier.....Adv. Technology
Harriet Vanslyke.....Admin. Support
Susan M. White De Pace.....NSLS

10 Years

Philip H. Baker.....Plant Eng.
Marilyn A. Banks.....Info. Services
Joseph F. Domiano.....AGS
Steven A. Hoey.....ES&H Services
John E. McCarthy.....Biology
Michael J. O'Connor.....Sfgrds & Sec.
Frank Toldo.....AGS

Arrivals & Departures

Arrivals

Douglas Hunter Jr......Medical
Gregory M. Meyer.....Plant Eng.
James Mungo.....Plant Eng.
Scott D. Sinclair.....Plant Eng.

Departures

None

1997 Tennis Ladder

Winter is over, so dust off your tennis racket and join the BERA Tennis Committee's ladder. Players of all abilities are welcome, and women are reminded that not only men climb ladders — female representation is welcome! The event officially started earlier this month, but it will run until Daylight Saving Time ends. So there's plenty of time for play.

For the $1 fee, players of all levels who are BERA members may sign up at the BERA Sales Office, weekdays, 9 a.m. to 1:30 p.m., in Berkner Hall.

For the first, "open" challenge, anyone can challenge anyone else on the ladder, regardless of position. Through May 8, open challenges are allowed at any level of the roster. After that, a player may only challenge players on the same rung or one rung higher.

The challenger — the person at the lower position — is expected to provide a new or only once-used can of tennis balls. Unless players agree beforehand to another scoring system, the first player to take eight games wins; a 12-point tie-breaker will be played if the score is tied at 7-7.

For more information on the rules and format, contact Joe Carbonaro, Ext. 5139, or e-mail carbona1@bnl.gov.

Bowling

Red & Green League — April 7

M. Meier 257/236/235/728 scratch series, R. Mulderig Jr. 240/225/203/668 scratch with a "Clean 30," W. Powell 228/224/602 scratch, S. Frei 227/217/622 scratch, R. Raynis 214/211/614 scratch, J. Goode 211/210/610 scratch, E. Larsen 209/201, A. Pinelli 278/665 scratch, G. Mack 249/634 scratch, R. Mulderig Sr. 237, K. Koebel 232, J. LaBounty 216, K. Asselta 214, F. Wahlert 213, J. Cuccia Sr. 212, J. Giuffre 205, N. Besemer 205.

Purple & White League — April 16

B. Tozzie 212/207/192/611 scratch series, G. Mehl 245/192/611 scratch, R. Raynis 227/209, Don King 209/185, M. Meier 226, R. Mulderig Sr. 222, E. Meier 219, K. Riker 210, K. Koebel 207, R. Eggert 205, T. Mehl 205, W. Rasmussen 190, D. Keating 183, J. McCarthy 181, I. Sperry 177, M. Yanez converted 1/5/7 split, D. Reynolds converted the 6/7/10 split.

IBEW Meeting

Local 2230, IBEW, will hold its regular monthly meeting on Monday, April 27, at 6 p.m., in the Knights of Columbus Hall, Railroad Avenue, Patchogue. There will be a meeting for shift workers at 3 p.m. at the union office. The agenda includes regular business, committee reports and the president's report.

Water Aerobics

Eight weeks of water stretching and exercise classes will be offered at the Lab pool, Bldg. 478, from 5:20 to 6:10 p.m., on Mondays, Tuesdays and Thursdays. The first classes will be on April 27, 28 and 30, respectively, for up to 25 participants at each class.

The classes are free, but participants, must pay the $2 daily pool fee or purchase a season pool pass. Employees and their spouses may sign up for one or more classes by calling Mary Wood, Ext. 5923 or Ext. 6251.

Volleyball

Semifinals

League II:

Spiked Jello vs. Monday Nite Live	3-1
Safe Sets vs. Undecided	3-0

Finals

Open League:

Spikers vs. Shank, Carry & Throw	3-0

League III:

Six Samurai vs. Just 4 Fun	0-3

Classified Advertisements

Placement Notices

The Laboratory's placement policy is to select the best-qualified candidate for an available position. Candidates are considered in the following order: (1) present employees within the department/division and/or appropriate bargaining unit, with preference for those within the immediate work group; (2) present employees within the Laboratory; and (3) outside applicants. In keeping with the Affirmative Action Plan, selections are made without regard to age, race, color, religion, national origin, sex, disability or veteran status.

Each week, the Human Resources Division lists new placement notices, first, so employees may request consideration for themselves, and, second, for open recruitment. Because of the priority policy stated above, each listing does not necessarily represent an opportunity for all people.

Except when operational needs require otherwise, positions will be open for one week after publication.

For more information, contact the Employment Manager, Ext. 2882; call the JOBLINE, Ext. 7744 (344-7744), for a complete list of all job openings; use a TDD system to access job information by calling (516) 344-6018; or access current job openings on the World Wide Web at http://www.bnl.gov/JOBS/jobs.html.

The following vacancies are exempt from the Director's hiring freeze.

SCIENTIFIC RECRUITMENT - Doctorate usually required. Candidates may apply directly to the department representative named.

POSTDOCTORAL RESEARCH ASSOCIATE - Trained in crystallography and one or more of the following fields: solid-state physics, solid-state chemistry and materials science. Strong background in crystallographic computing and structure analysis by the Rietveld profile method (including magnetic structures), phase equilibria studies at high and low temperatures, and experience with instrumentation and computer control are preferred. The research program is centered around the application of high-resolution synchrotron x-ray and neutron powder diffraction techniques to structure determination, phase transitions and properties of a wide range of inorganic materials, and also includes the development of instrumentation and techniques for structural studies at high and low temperatures and high pressures. The research facilities include state-of-the-art powder diffractometers at beamline X7A at the National Synchrotron Light Source, and equipment for solid-state synthesis at high temperatures. Contact: David Cox, Physics Department.

POSTDOCTORAL RESEARCH ASSOCIATE - Trained in plant physiology and molecular biology. Must be proficient with Free-Air Carbon Dioxide Enrichment work, as well as with standard molecular biological techniques, immunological techniques, and physiological ecology techniques such as gas exchange and *in vivo* fluorescence measurements. Will participate in the study of acclimation of terrestrial photosynthesis and primary production with global atmospheric changes. In particular, the project aims to elucidate the molecular bases by which C-uptake by primary producers adjust to atmospheric CO_2 concentration increase, and interact with rising temperature and change in nitrogen supply. Contact: George Hendrey or Julie LaRoche, Department of Applied Science.

LABORATORY RECRUITMENT - Opportunities for Laboratory employees.

MK7497. FIREFIGHTER/EMT-D POSITIONS - Requires five years' progressive experience in a fire department, qualifications as a motor pump operator on a Class A pumper, and possession of a current NYS EMT-D certificate. In descending order of importance, the following criteria will be used for selection in the event two or more individuals meet the above criteria: certified OSHA Hazardous Materials Technician, certified in Confined Space Rescue, current line officer in home department, and possession of an associate's degree or higher in fire protection technology. Must be willing to work shifts at the completion of training period. ES&H Services Division.

MK7876. ADMINISTRATIVE SECRETARIAL POSITION - Requires an AAS in secretarial science or equivalent, at least several years' relevant experience, skills in MS Word, Access, PowerPoint, WordPerfect, IPAP and the Laboratory's travel systems. Excellent communication skills and a good working knowledge of the Laboratory's policies, practices and procedures are also required, as is the ability to develop reports on spreadsheet, database or file management software programs and to work on fast-track multi-task projects. Knowledge of and experience working with ES&H issues are highly desired. Will be responsible for interacting with staff within and outside Lab to arrange conferences, meetings, appointments, services and information gathering. Will also provide other complex administrative and secretarial functions as required by Office Manager. Independent Oversight Office.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside candidates.

DD7695. DESIGN POSITION - Requires the ability to perform mechanical design functions, with working knowledge of engineering fundamentals, machine design, shop practices, welding and vacuum systems. Must be familiar with ANSI Y14.5-1982. Experience with AutoCAD, Windows NT/UNIX necessary. Knowledge of Pro-Engineer/Mechanical Desktop desired. Will be responsible for design projects from conceptual layouts to detailed working drawings. Alternating Gradient Synchrotron Department.

DD7346. TECHNICAL POSITION - (term appointment) Requires an AAS degree in a technical field, several years' experience in an engineering and manufacturing environment, knowledge of configuration control principles and advanced word-processing skills. Responsibilities will include generating, processing and distributing documentation in support of magnet construction, including travelers, work orders, discrepancy reports and engineering change requests. Additional responsibilities include the review and approval of end item documentation. Will provide assistance to inspection and inventory functions. Relativistic Heavy Ion Collider Project.

DD7404. CLERK-TYPIST POSITION - Under general supervision performs routine clerical duties requiring the use of several procedures and making minor decisions requiring some judgment. Typical duties include typing, filing, distributing documents and correspondence, maintaining records and files and other miscellaneous office functions, such as posting to registers, ledgers or other records. Administrative Support Division.