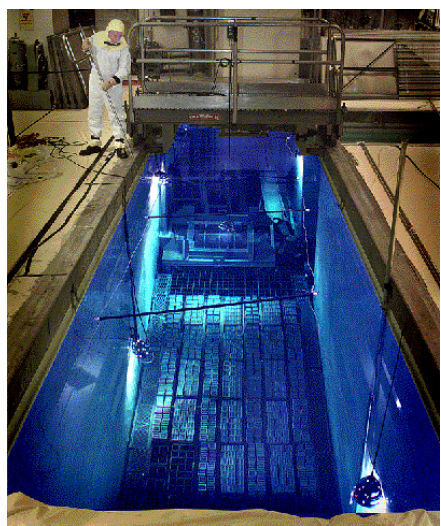


Spent-Fuel Pool At HFBR Emptied; Year-Long Tritium Remediation Project Concluded

Since the beginning of 1998, the pages of the Brookhaven Bulletin have been dominated by news of the transition of BNL's management from Associated Universities Inc., to Brookhaven Science Associates.

But there has been other news over the past few months, and a particularly noteworthy example was the



Roger Stoutenburgh

At left, spent fuel elements are stored in the pool in the High Flux Beam Reactor, covered by water containing the radioactive element tritium. At right, in a photo taken after December 30, 1997, the pool is empty: spent fuel elements have been removed and shipped off site for safe storage, and the tritiated water has been pumped from the pool.



Peter Horton



Roger Stoutenburgh

The contributions of the hundreds of BNL and U.S. Department of Energy staff who were involved in the Tritium Remediation Project were acknowledged at a gathering in January, after the project's completion.

completion of the Tritium Remediation Project — ahead of schedule and under budget.

Headed by Robert McNair, Reactor Division, the Tritium Remediation Project involved hundreds of BNL and U.S. Department of Energy staff.

"It was truly a team effort," McNair said. "Everyone involved gave significant input, and without their individual contributions, the project would not have been successful."

The Tritium Remediation Project was essentially completed on December 30, 1997, when water from the spent-fuel pool of the High Flux Beam Reactor (HFBR) was pumped out — almost a year after BNL first discovered tritium contamination in monitoring wells immediately south of the HFBR.

As a result of the January 1997 discovery, BNL took the following actions:

- identified the HFBR spent-fuel pool as the major source of this tritium contamination, which was confined to groundwater on BNL property and never posed any danger to anyone, either on or off site.
- completed extensive characterization of this tritium contamination.
- started interim pumping of groundwater from an area of low tritium contamination to prevent the tritium from ever leaving the site in concentrations above the state and federal drinking-water standard.
- completed shipping all spent fuel elements and other equipment from the spent-fuel pool.
- incorporated the area of tritium contamination into the federal Superfund process for a final decision on handling this contamination.
- emptied the spent-fuel pool of tritiated water and pumped the water to double-walled tanks on the BNL site.
- removed sediment from the pool bottom.

The HFBR was already shut down for routine maintenance when the tritium contamination was discovered a year ago.

The reactor has remained shut down, and DOE is conducting a formal environmental review that will help determine its future.

335th Brookhaven Lecture Among the Dark Horses of Physics — Axions Matter

Now that tourists vacation anywhere from the jungle to the Arctic, and scientists understand minute interactions of matter with almost commonplace accuracy, what is left to explore?

Well, among a few alluring alternatives . . . axions!

To describe these elusive, hypothetical particles and some of his research at BNL and elsewhere aimed at detecting axions, Physicist Yannis Semertzidis of the Physics Department will deliver the 335th Brookhaven Lecture, "Let There Be Darkness: A Search for Axions." Semertzidis will give his talk in Berkner Hall on Wednesday, March 25, at 4 p.m., when he will be introduced by Physicist William Morse.

As Semertzidis will explain, axions may be X , the unknown particles that could shed light on one of the universe's most intriguing mysteries: dark matter. Dark matter is the name given to the huge amount of the universe — 90 percent — that an astronomer in 1933 noted to be "missing." It is known to exist because of its observed gravitational pull on the motion of the galaxies, yet it is invisible to all wavelengths of electromagnetic light.

Various explanations of dark matter have been proposed, but the nature of this missing mass — of what particles dark matter is made — is still unknown. One characteristic seems certain: Dark matter particles must react so weakly with almost everything that they pass through it and so seem invisible. Among several can-



Roger Stoutenburgh

Observations of spiral galaxies, such as the one pictured surrounding Yannis Semertzidis, give evidence of the existence of dark matter.

didates is the hypothetical particle called the axion.

Physicists have other reasons to search for axions, mainly, as the explanation for what is called CP violation. Discovered in 1963 at BNL by James Cronin and Val Fitch, who won the 1980 Nobel Prize in physics for their find, CP violation is a vital part of the theory known as quantum chromodynamics, or QCD, which describes strong interactions between quarks, the smallest entities known to make

up matter. Success in the axion search is expected to have important implications for this comparatively little-explored area of physics.

After receiving his B.S. in physics in 1984 at the Aristotle University of Thessaloniki, Greece, Semertzidis earned his 1987 M.S. and 1989 Ph.D., both in physics, at the University of Rochester, where, from 1990-92, he became a research associate.

Semertzidis' first links with BNL (continued on page 2)

Tomorrow — A Day to Discover LI's Pine Barrens

Brookhaven National Laboratory will be among the many exhibitors that will be on hand at a special event this Saturday, March 21 — a day aimed at teaching Long Islanders about the unique pine barrens ecosystem that they all share.

Called Pine Barrens Discovery Day, the event will be completely free and family-friendly, with displays, talks and short hikes scheduled throughout the day, from 8 a.m. to 4 p.m. at Suffolk Community College's Eastern Campus off Route 51 in Riverhead.

The BNL booth will feature pictures of the Lab's 3,500 acres of pine barrens, and our efforts to protect and clean up our local environment. Stop by with your family and say hi to the volunteers staffing the booth!

For more information, call Jan Naidu, Ext. 4263.



We're Heating With Gas — And Reducing Emissions!

How is this heating season different from last year's at BNL? This winter, about 63 percent of the Lab's buildings are being heated with gas — a move that reduces emissions that contribute to air pollution.

In the conversion completed last August, the Lab has also retained its capacity to heat with oil, providing a flexibility that should cut fuel costs.

The Laboratory has agreed to purchase natural gas over a period of about three years from the Long Island Lighting Company (LILCO) to heat approximately 80 buildings on the 5,300-acre site. LILCO has installed two miles of natural gas main leading to BNL's central steam plant, which provides steam for cooling and heating the Lab's buildings.

In the BNL-LILCO contract, the utility has the option of temporarily discontinuing gas service to BNL in the winter when supplies are low. In exchange, the Lab will pay lower rates.

To reduce emissions, Brookhaven had switched to a very low-sulfur, low-nitrogen fuel oil in 1995. With the conversion to gas, the Lab's emissions

will be reduced even further.

BNL engineers calculate that sulfur-dioxide emissions will be reduced by 95,000 pounds per year, while nitrogen oxide emissions will be cut by 120,000 pounds per year.

The conversion to gas heat cost the Lab \$1.2 million in engineering and construction costs, which involved changing safety systems, burners, piping and burner-management systems.

However, since the new heating flexibility is expected to save BNL approximately \$500,000 per year — about \$400,000 in fuel oil costs and \$100,000 in operational expenses — the construction costs should be recovered in about two years.

Mark Toscano, BNL's energy manager, said, "This dual capacity to heat with oil or gas provides us with several options that should lead to significant savings. We have a 1.8-million-gallon storage capability for fuel oil, so we can buy large quantities of oil in the summer, at a cheaper rate. Also, after the Laboratory fulfills its contract with LILCO, we can purchase natural gas from any supplier. Further savings could then be accrued, since we would look for the most attractive price of both oil and gas."



Roger Stoutenburgh

Standing behind Boiler No. 7 at BNL's Central Steam Plant, which was recently converted to burn both natural gas and No. 6 fuel oil, are Plant Engineering Division staff: (from left) Energy Manager Mark Toscano, Steam Plant Group Leader Ron Wagner, Utilities Project Engineer Walter Bay, Energy Project Engineer Chris Channing and Steam Plant Supervisor Ernie Simon.

The conversion project was de-

signed by BNL engineers, with burner design and installation by Peabody Engineering Corporation of Stamford, Connecticut. — Diane Greenberg

Recognized for Energy Savings



Roger Stoutenburgh

Four members of the Plant Engineering Division's Energy Management Group: (from left) Tom VanderPutten, Mark Toscano, Barbara Pierce and Chris Channing, display the energy-management award presented to them by the U.S. Department of Energy at a ceremony held in Washington, D.C., last October. They were honored for helping reduce energy consumption at the Lab by more than 20 percent per square foot in fiscal year 1996, compared to 11 years ago. This reduction exceeds the requirements set forth in the amended National Energy Conservation Policy Act, which states that all federal buildings must reduce energy consumption by 20 percent — compared to fiscal year 1985 — by the year 2000. To achieve that four years early, BNL made heating, ventilation and air conditioning improvements, installed computerized energy-management control systems, and upgraded insulation and lighting. In addition, the Lab installed new windows and replaced old wood siding with vinyl siding in dozens of buildings on site. — Diane Greenberg

Weight-Loss Classes

Weight Loss/Nutrition Education classes will be offered at \$99 for eight to ten weeks on Thursdays at noon, starting Thursday, April 2. Taught by a certified, registered dietitian, the program can include a personal program tailored to your special medical and/or nutritional needs.

With each registration, a complementary gift — admission for the May luncheon "Quick and Easy Healthy Cooking Workshop" — will be given by Total Wellness, Inc., which is offering the classes.

To register or for more information, call Health Promotion Specialist Mary Wood, Ext. 5923, before Tuesday, March 31.

BNL Lecture

(cont'd.)

were from 1986 to 1989, when he worked on Experiment 805, a Rochester-BNL-Fermi National Accelerator Laboratory search for galactic axions. Also, 1987-92, still from Rochester, he worked at BNL on Experiment 840 on light pseudoscalar or scalar coupling to photons.

Joining BNL's Physics Department in 1992 as an assistant physicist, he moved to CERN as a fellow for 18 months, 1993-95. After returning to BNL as an associate physicist for two years, he was named Physicist in 1997. Currently, he is working full-time on the muon g-2 experiment at the Alternating Gradient Synchrotron.

After the lecture, all are invited to

Healthline Lecture

Heart Disease: Treatment Trends

Each year, 1.5 million Americans experience heart attacks, but, today, heart attacks are not necessarily fatal: Two out of three people survive, thanks to improved awareness of their symptoms and improved treatment.

What is being done to increase those survival odds will be discussed during the next Healthline lecture: On Thursday, March 26, cardiologist Mitchell Saunders will speak about "Current and Future Trends in Treating Heart Disease" at noon in Berkner Hall. All are invited to attend this lecture, which is sponsored by the Health Promotion Program (HPP) of the Occupational Medicine Clinic.

Mitchell Saunders, M.D., is a board-certified cardiologist specializing in cardiac rehabilitation. For the past eight years, he has been practicing with North Suffolk Cardiologists.

To register, return the completed bottom portion of the Healthline flyer recently sent to all employees to Health Promotion Specialist Mary Wood, Bldg. 490, by March 24. For more information about HPP and its Healthline lecture series, call Ext. 5923.

Pick Up Daffodils — Help Cancer Research

Again this year, BERA is selling daffodils to benefit the American Cancer Society. Each bouquet is \$6, and whether or not you have already reserved an order, stop by and pick up a bunch of spring in the lobby of Berkner Hall, Thursday, March 26, 11:30 a.m.-1:30 p.m.

While supplies last, daffodils will also be available in the BERA Sales Office on Thursday and Friday, March 26 & 27. For more information, call Andrea Dehler, Ext. 3347.

join Semertzidis for discussion and refreshments. To accompany the lecturer for dinner at a restaurant off site, call Jackie Mooney, Ext. 3743, by noon on Wednesday, March 25.

— Liz Seubert

Volunteers Wanted

Healthy volunteers aged 21 through 45 years are wanted to participate in a magnetic resonance study of the human brain. Candidates should nei-

Note to Employees:

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

HazWoper Training

A free, 40-hour HazWoper training class will be offered on site from 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.

Summer Students

This year, the Office of Educational Programs will once again conduct a Summer Student Program.

Student placement will involve online review of applications in a central computer database established by the U.S. Department of Energy.

Final information on the review process is expected by early next week: Look for an announcement initiating the placement process.

ther have medical or psychiatric conditions, nor suffer from claustrophobia, which is anxiety in cramped spaces.

Successful candidates will receive \$20/hour for their participation.

Anyone interested in volunteering for this study should contact either Jullie Pan, Ext. 3708, or Hoby Hetherington, Ext. 5274.



IBEW Meeting

Local 2230, IBEW, will hold its regular monthly meeting on Monday, March 23, 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.

Computer Training

The Computing & Communications Division plans the following classes for May:

- C++ Programming
 - Perl Programming
 - Solaris System Administration
 - C Programming
 - Introduction to UNIX.
- To register your interest in any of these classes, e-mail Pam Mansfield at pam@bnl.gov.

Volleyball

Standings as of March 12

League I		League III	
Bikers & Spikers	58-11	Silver Bullets	42-9
Set to Kill	41-28	Group Sets	37-11
Scared Hitless	35-31	Just 4 Fun	29-22
RudeDogs	36-33	Upton Ups	24-24
ReTurners	1-68	Six Samurai	16-29
League II		Just In Time	13-35
Safe Sets	43-11	NWO	7-38
Spiked Jello	40-14	Open League	
Monday Nite Live	39-15		
Jao-About-That	32-22	Spikers	48-18
Undecided	30-24	Shank.Carry&Throw	38-28
Nuts & Bolts	20-34	Death Volley	28-38
Fossils	10-44	Pass, Set & Crush	25-38
Setups	2-52	Far Side	23-40

Bowling

Week of March 9

Red & Green League

G. Mack 224/603 scratch series, E. Larsen 209, A. Pinelli 206, E. Sperry 201, H. Arnesen 201, R. Mulderig Jr. 200, R. Raynis 200.

Purple & White League

R. Eggert 247/243/233/725 scratch series, R. Raynis 255/219/653 scratch, K. Koebel 214/207/198/619 scratch, R. Koebel 207/190/171, Don King 220/190, B. Giuliano 218/218, M. Meier 208/198, B. Tozzie 205/183, G. Mehl 202/199, T. Dilgen 200/190, J. McCaffrey 192/186, P. Manzella 182/178, B. Mullany 244, K. Conkling 214, M. Addressi 214, L. DiPierro 210, R. Mulderig 205, E. Sperry III 200, T. Blydenburgh 200, Donna King 198, J. Zebuda 196, K. Batchelor 193, M. Guacci 191, J. Pinelli 190, F. Simes 189, J. Addressi 188, N. Fewell 182, J. Meier 182, M. G. Meier 188, B. Rothe 185, K. Eggert 174.

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 - Recent DVM or DVM/PhD who must have training in veterinary pathology; experience in neuropathology is highly advantageous, and a PhD in veterinary pathology is desirable. Will work in a multi-disciplinary group developing boron neutron capture therapy (BNCT), an experimental form of radiation therapy for the treatment of brain tumors. Research involves the radiation biology of BNCT in tumors and especially in the normal tissues within the treatment field. Will extend BNCT to other sites, such as lung tumors. Will be expected to develop research projects using immunohistochemical and molecular biology techniques to study the radiobiological effects of BNCT. Contact: Jeffrey Coderre, Medical Department.

POSTDOCTORAL RESEARCH ASSOCIATE - Trained in theoretical condensed-matter physics, with experience in computational electronic structure methods. Experience in large-scale parallel computing is preferred. Will focus on studies of the properties of metallic alloys, phase stability, and microstructure and defects. Contact: Michael Weinert, Physics Department.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside candidates.

NS7587. PROGRAMMER/ANALYST POSITION - Requires an MS in computer science, physics or related field, with at least seven years' experience in database management and software development. Experience in a scientific environment is preferable. Database design experience and good problem-solving skills are required; experience in C, C++, Java, or Perl languages highly desirable. Sybase experience is desirable. Will participate in database design and development of database interface tools for the accelerator controls environment. Alternating Gradient Synchrotron Department.

DD7315. TECHNICAL POSITION (Crane Inspector) - Will perform inspections of overhead cranes, hoists and mobile lifting equipment; witness acceptance/load tests for new cranes, develop and update procedures for material handling operations, develop and implement training programs related to material handling. Will also be required to perform construction safety inspections and evaluate Rigging Plans. Must have significant experience and training in Crane and Hoist Inspections and Rigging Safety as well as good communication, interpersonal and computer skills, such as MS Word or WordPerfect, Access and Excel. Plant Engineering Division.