BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

New AUI Vice President Named For Environment, Safety & Health

In filling the newly created position of Vice President for Environment, Safety & Health (ES&H), Associated Universities, Inc. (AUI), for the first time has a corporate office dedicated exclusively to ES&H issues and once again has one of its officers stationed full time on site.

On January 1, attorney Leland Willis assumed the new vice presidency. Since January 8, he has been in his office on the second floor of Bldg. 460, working on ES&H issues for BNL and the National Radio Astronomy Observatory (NRAO), the two institutions managed by AUI. In addition, Willis is serving as AUI Deputy General Counsel.

"In recent years, the environment and safety and health issues have become increasingly important to the nation, to DOE and to its contractors," says AUI President Robert Hughes. "Since we have no doubt that ES&H will continue to be a priority in the future, AUI has created this new position so to ensure that we are doing everything possible at BNL and NRAO to maintain a healthy and safe environment, both within the workplace and on and around each site. To maintain a long-standing tradition of having an AUI officer on site, the office of this vice president has been located at BNL."

Concludes Hughes, "After an extensive national search, we were able to persuade Leland Willis to join the AUI family, bringing with him a broad knowledge and extensive experience in all aspects of ES&H and DOE affairs."

Organized in 1946, AUI established BNL in 1947 and continues to manage its operation under contract with the U.S. Department of Energy (DOE). In 1956, AUI founded the NRAO and has managed the operation of its radiotelescopes based in Green Bank, West Virginia, and Socorro, New Mexico, by cooperative agreement with the National Science Foundation.

In addition to its president and new vice president, AUI has four other officers. While Willis is the only one permanently located on site, AUI Vice President for Programmatic Affairs Jerome Hudis continues to divide his time between BNL and AUI's Washington, D.C., headquarters.

Willis came to AUI from Martin Marietta Energy Systems, Inc. (MMESI), Oak Ridge, Tennessee, after 14 years with the contractor that operates Oak Ridge National Laboratory and four associated plants for DOE.

Leland Willis

Serving as MMESI's Assistant General Counsel for the past eight years, Willis handled ES&H legal matters, including negotiating with Tennessee and the U.S. Environmental Protection Agency for air, water, solid and hazardous waste permits; negotiating agreements, and defending and litigating cases under the national Comprehensive Environmental Response, Compensation & Liability Act, which is better known as the Superfund act; ensuring compliance with Occupational Safety & Health Administration regulations; and negotiating the environmental and liability clauses in Martin Marietta's prime contract with DOE.

"I have witnessed how the DOE's emphasis on ES&H has increased to the point where, now, DOE puts as much emphasis on ES&H at its facilities as it does on research and productivity," comments Willis. "Given this equal emphasis, it now is my job to make sure that AUI and, as a result, the Lab and the Observatory are meeting or exceeding their ES&H responsibilities as spelled out in state and federal law and AUI's

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See a Winner, Be a Winner

Stop by Berkner Hall through January 27, to see a display featuring last year's R&D 100 Award winners from U.S. Department of Energy laboratories. Among them is the energy-saving home heating device developed by Thomas Butcher and Roger McDonald, Department of Applied Science, and Philip Cerniglia, of the then Accelerator Development Department.

You may also want to consider entering the next R&D 100 competition, with any new product that was completed and delivered by a federal laboratory, or became available for contract or licensing, between January 1 and December 31, 1992. BNL pays all entry fees and any expenses associated with winning an R&D 100 Award.

Applications are now available from the Dorry Tooker, Office of Technology Transfer (OTT), Bldg. 902C, Ext. 2078. OTT must receive all entries by February 15.

BNL Honors Five Scientists With Distinguished R&D Awards

For their outstanding contributions to Brookhaven's research and development mission, five BNL scientists were named recipients of the Laboratory's Distinguished Research & Development Awards.

The 1992 Distinguished Research and Development Award recipients: (from left) Joseph Wall, Peter Takacs, Masaki Suenaga, Per Bak and Krsto Prelec. —Photos on this page by Roger Stoutenburgh

The five recipients of before-tax awards of $5,000 each were:

- **Per Bak,** *Senior Physicist, Physics Department*
- **Krsto Prelec,** *Senior Physicist, Alternating Gradient Synchrotron Department (AGS)*
- **Masaki Suenaga,** *Senior Metallurgist, Department of Applied Science (DAS)*
- **Peter Takacs,** *Physicist, Instrumentation Division*
- **Joseph Wall,** *Biophysicist, Biology Department*

The honorees received their checks, along with an engraved glass-and-marble memento, from BNL Director Nicholas Samios, at a ceremony last December.

"It is a pleasure to acknowledge, in such a meaningful way, these five outstanding scientists," said Samios. "They make BNL a better place, and BNL benefits from their presence and contributions."

One of four types of awards in BNL's Recognition Awards Program, the Distinguished Research & Development Award recognizes distinguished contributions, over one or more years, to the Lab's research and developments mission. Those eligible for this award include employees in BNL's scientific departments and divisions who are either members of the Scientific Staff or on the Engineer/Scientific Associate/Computer Analyst schedule.

From these groups, which represent about 35 percent of BNL's almost 3,600 employees, all department chairmen and division heads were invited to submit nominations. A five-member selection committee selected the final five, who were recommended to Samios for his final approval.

Chaired by Mark Sakitt, Assistant Director for Planning & Policy, the committee included: John Axe, Associate Director for Basic Energy Sciences; Sy Baron, Associate Director for Applied Programs; Mel Schwartz, Associate Director for High Energy and Nuclear Physics; and Richard Setlow, Associate Director for Life Sciences.

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County and BNL Work Together to Increase Traffic Safety at William Floyd Intersections

With over 3,900 vehicles entering and exiting the Laboratory daily during peak traffic hours via the four-lane William Floyd Parkway, BNL has long been concerned with traffic safety where the parkway, also known as Suffolk County Road 46, intersects access roads to the Lab.

In fact, BNL's concerns were addressed in an August 6, 1992, letter to Suffolk County — 13 days before the accident that claimed the lives of BNL employee Valerie Bridgett and two family members. At that time, Bob Casey, Head of BNL's Safety & Environmental Protection Division, wrote to Suffolk County Chief Engineer Richard LaValle, Department of Public Works, whose written response was dated October 8.

The continuing dialogue between BNL and Suffolk County and the actions growing out of that communication are described in the following edited summary of both letters:

Synchronization of Lights

In his letter, LaValle noted, "The signals at this location are synchronized and operate in a manner that assures optimum safety and efficiency for the traveling public." He also said that the number of accidents at this location has not increased since the intersection and the traffic signal were rebuilt in 1989: There were 13 accidents in 1988, 15 in 1989, 6 in 1990, and 11 in 1991.

"In view of the recent tragic accident," LaValle wrote, "let me point out that at no time is there an east-west green displayed concurrently with a north-south green at either intersection. Since there is only one controller operating these two intersections, it is virtually impossible for a north-south green to be displayed at the same time as an east-west green."

An additional safeguard, LaValle added, is provided by a device called a conflict monitor. If, due to a malfunction, conflicting greens are ever

(continued on page 3)

Five Scientists Win BNL's Distinguished R&D Awards

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Per Bak

To indicate the impact of Per Bak's work, Peter Bond, Physics Department Chairman, noted that "over the past four years he has *averaged* per year, 13 invited talks, seven colloquia and five seminars. As a sidelight, I might mention that he was invited to Senator Gore's office to talk about this subject, and he is widely quoted in the Senator's book."

The pioneering work by Bak that has excited so much interest is on the phenomenon of what he calls self-organized criticality. Developed by Bak with former department colleagues, the theory recognizes that many large dynamical systems can organize themselves into a critical state of equilibrium in which a small perturbation can produce either small, large or devastating effects.

This theory, which has inspired recent work in which various astronomical observations are interpreted as evidence of self-organized criticality, has led Bak to apply his idea to astrophysics. His latest studies have been on models that may indicate that the universe itself operates at the self-organized critical state. This, he speculates, could explain the missing mass of the universe.

The original theory is based on the idea that many large dynamical systems with no characteristic size or time seem to have some underlying link in the way they are driven. For example, clouds, mountains, and x-rays from solar flares have features varying from very small to very large. Yet if all the possible measurements of a system are plotted in two graphs, they look very similar.

Other systems, such as quasar light or the Dow Jones average, come in fast, slow and intermediate fluctuations. When these frequencies are plotted mathematically, the general pattern of each graph is similar, giving evidence that these dynamical systems have an underlying universal organization.

These computations show that the systems evolve naturally towards a "critical state." This state appears stable, yet is poised to evolve into another condition, as when earth tremors do, or do not, develop into a major earthquake. With no characteristic length or time scale and independent of a particular circumstance — this state is "self organized."

Bak explains his idea with the example of a sandpile that is started with a few grains of sand dropped randomly on a table. At first, the grains act individually, but as more energy is put into the system, the pile becomes steeper, creating small avalanches, then large ones — until the sandpile reaches a critical height beyond which it cannot grow.

At precisely that state, the system begins to communicate globally and events of all sizes occur. A plot of these events invariably shows a straight line. In Bak's view, many systems organize themselves into such a state, rendering each difficult to predict.

A large amount of scientific literature and certain articles in the semi-popular press have applied Bak's idea to such diverse subjects as intensity of earthquakes, distribution of forest fire storms, and fluctuations of the economy. The topic was chosen as a *Physics News* highlight of 1988. And, Vice President-Elect Al Gore, in his 1992 book *Earth in the Balance*, based his conclusions on the dynamics of change "both in our lives and in the world at large" on Bak's theory.

— Liz Seubert

Krsto Prelec

In nominating Krsto Prelec, AGS Department Chairman Derek Lowenstein recognized him as "a world-renowned expert in the research and development of ion sources. His seminal contributions to accelerator physics have had a major lasting impact on the construction of beam preinjector systems for high-energy accelerators over the past 20 years."

When Prelec first came to BNL in 1972 to join the then Accelerator Department, the capabilities of high-energy proton accelerators were limited, in effect, by phenomena during the injection of protons into a synchrotron. The traditional way of filling the synchrotron ring at that time was to produce positive hydrogen ions (protons) in a source, accelerating them in a linear accelerator (Linac), then injecting them into the synchrotron. However, a fundamental constraint, called Liouville's theorem, limited the duration of the injection interval, thus limiting the final beam intensity.

In 1972, Prelec and a colleague proposed injecting negative hydrogen ions (H^-), instead of protons, in the AGS ring, a process called charge-exchange injection.

In this process, the ion source produces H^- ions rather than protons, and it is these ions that are then accelerated in the Linac and injected into the ring through a very thin foil, losing both of their electrons and entering the ring as protons.

This method circumvents the Liouville's theorem constraint, resulting in a much higher beam intensity and lower losses and radiation levels. Used in the AGS since 1982, this method has been or will be applied at such other laboratories as Fermi National Accelerator Laboratory and the Superconducting Super Collider Laboratory.

In the course of their work on H^- ion sources for synchrotrons, Prelec and his colleagues have also developed even more powerful models for use in neutral-beam systems for plasma heating in fusion devices, receiving several patents in this field.

Prelec had recognized that although the AGS negative-ion source was a great improvement, the fact that some cesium had to be used in the source was a disadvantage. A few years ago, he developed a new type of H^- ion source that does not require cesium vapors for its operation and is expected to replace the existing AGS source sometime next year.

Among Prelec's other research interests is heavy-ion acceleration. In 1973, he co-authored a detailed proposal to accelerate uranium ions in the AGS, outlining the basic scheme using the Tandem Van de Graaff and a small booster synchrotron. This approach has recently been realized with the AGS Booster.

Now Deputy Chairman of the AGS, Prelec is participating in the development of a high-charge state, heavy-ion source of the electron-beam type known as EBIS, short for electron-beam ion source. If successfully developed, an EBIS could replace the present Tandem Van de Graaff accelerators, together with a 600-meter-long transfer line, as heavy-ion injectors to the Booster. The potential benefit of this change would be a reliable and copious supply of a broad range of heavy ions up to uranium, at a substantial cost savings in operating the Relativistic Heavy Ion Collider.

—Liz Seubert

Masaki Suenaga

Masaki Suenaga, was nominated "in recognition of his outstanding record of achievement spanning 20 years, in both basic and applied research, on the materials science of superconductors, as well as for his productive interactions with U.S. superconductor manufacturers," noted Kelvin Lynn, Head of DAS's Materials Science Division.

Superconductors are materials that totally lack resistance to the flow of electricity. Materials become superconducting at different critical temperatures. Until 1986, the highest critical temperature was 23 kelvins (K), or -410°F; that year, with the announcement of the discovery of what are called high-temperature superconductors, critical temperatures rose first to 35 K, then to 90-100 K. That same year, BNL announced discovery of the second 90-100 K high-temperature superconductor — by a Suenaga and a colleague.

Before the appearance of high-temperature superconductors, the low-temperature superconductor niobium-tin had occupied most of Suenaga's time since he joined DAS in 1969.

Suenaga's research on niobium-tin has enabled low-temperature superconductor and its alloys to be engineered into composite wires and tapes for use in high-field magnets — such as those employed in high-field magnetic fusion research, and those planned for nuclear magnetic resonance imaging devices.

While niobium-titanium is the most widely used conventional superconductor, niobium-tin interested Suenaga because, though brittle, it can carry larger currents than niobium-titanium can in high magnetic fields.

His first step in overcoming the brittleness came in 1971, when he and a colleague proved they could fabricate multifilamentary wire with niobium-tin. Their modification became the basis of what is called the internal tin process currently used by all U.S. manufacturers of niobium-tin wires for high-field magnets.

Next, in 1976, Suenaga and another colleague developed an understanding of how critical currents in niobium-tin wire change with mechanical tensile strain. This became the basis for the design of both the niobium-tin wire and high-field magnets using this superconductor.

In 1984, Suenaga and company discovered that, by substituting small amounts of titanium for niobium, niobium-tin in its superconducting state can carry a higher current, needed in large superconducting magnets used for magnetic fusion research. Other discoveries further increased the critical current carrying capacity of multifilamentary superconducting wire, in 1985.

Suenaga also found that niobium-tin loses little alternating current and that these losses can be minimized by modifying the production of niobium-tin tape — discoveries that made possible completion of BNL's superconducting power transmission cable and its proof of principle.

AUI

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prime contract with DOE."

At BNL, Willis is taking time to learn "what and how we're doing in ES&H," by meeting with BNL Associate Director for Reactor, Safety & Security M. Sue Davis, who oversees the Lab's ES&H activities.

During his review, Willis is taking especial interest in the legal aspects of operations of the Office of Environmental Restoration, which was established in 1991 to manage the cleanup of the Lab as a Superfund site; the hazardous waste management program run by the Safety & Environmental Protection Division; and BNL's sewage treatment plant operated by the Plant Engineering Division.

"I like understanding ES&H management by taking a hands-on approach — talking to and working with the people who deal daily with ES&H," explains Willis. "In doing my job, I hope I won't ruffle any feathers: I know that there is somewhat of a struggle between science and ES&H, but I don't think that struggle has to go on. ES&H is here to stay, so I'm here to answer questions and to help avoid problems that not only could impact environmental health and occupational safety, but also could affect the progress of science."

Leland Willis received his Juris Doctor degree in 1976, from the Valparaiso University School of Law, Indiana. Having worked as a staff attorney for Southeast Tennessee Legal Services, 1977-78, Willis had a brief stint in private practice before joining Union Carbide Corporation, which was the DOE contractor operating Oak Ridge at the time, as an attorney in September 1978.

Formally from Knoxville, Tennessee, Leland Willis, his wife Shirley Willis and their six-year-old son Bryan are living on site while looking for a home in the area.

BWIS Meeting

Jean Howard, Medical Director of the Marshall Islands Medical Program in BNL's Medical Department, will be the guest speaker at the next Brookhaven Women in Science meeting. She will present her "Observations on the Medical and Social Consequences From the Fallout of Bravo," on Wednesday, January 20, at noon, in Room A, Berkner Hall.

Detonated in 1954, Bravo was the first test of a deliverable hydrogen bomb. It was the most powerful weapon ever activated by the U.S., — 100 times more forceful than the bomb that exploded over Hiroshima.

The Bravo test was planned to be localized on the uninhabited Pacific atoll of Bikini, in the Marshall Islands. An unexpected wind shear, however, caused its fallout to be accidentally deposited on inhabited islands to the east.

In 1957, the U.S. government requested that BNL take care of detecting and treating any diseases that may have resulted from this radiation exposure. Over 35 years later, this program continues, now directed by Jean Howard.

Howard first came to BNL in 1960, spending three summers as a student in Medical. She went on to medical school at the University of California, San Francisco (UCSF), to a medical residency at Pacific Medical Center in San Francisco, and to a hematology/oncology fellowship at UCSF.

Before coming back to BNL, Jean Howard worked with the Red Cross, was in private practice and served in the military, where she was on active duty in Colorado for Desert Shield.

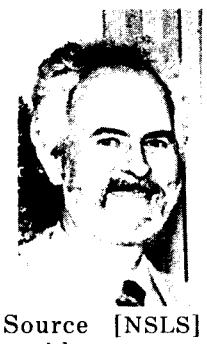
The meeting is open to all. Please bring your lunch; coffee and tea will be provided.

Note to Employees:

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

Since the discovery of high-temperature superconductors, Suenaga has focused his attention on various superconducting compounds containing copper, and the relationship between microscopic defects in their lattice structure and their critical current density. Most recently, he has proved that some magnetic characteristics that were previously thought to be unique to these cuprates are also shared by niobium-titanium alloys, among other low-temperature superconductors. — Marsha Belford

Peter Takacs



In nominating Physicist Peter Takacs, Veljko Radeka, Head of the Instrumentation Division, cited his "timely solution of significant problems experienced by the evolving National Synchrotron Light Source [NSLS] research community, with respect to inadequate and inferior mirror metrology. He had the insight to recognize and clearly define an important problem at the right time, developed the methods to solve the problem, and consequently benefited the users of the NSLS and elsewhere, in this country and worldwide."

At BNL, precise, ultra-smooth mirrors are critical to the success of experiments conducted at both the NSLS and High Flux Beam Reactor.

In the early 1980s, however, many manufactured mirrors were unusable. Optical metrology — the science of measuring optics to make sure they meet specifications — was at a somewhat primitive stage, without standards to help manufacturers make mirrors to the user community's exacting requirements or measuring techniques or instruments with the necessary precision and accuracy.

Into this void came Takacs's pioneering work. This resulted in his establishing at BNL a metrology laboratory that measures approximately 150 synchrotron mirrors per year — valuable to manufacturers and users alike for spotting flaws before mirrors are installed.

In addition to improving the capabilities of this lab, Takacs is also exploring research avenues opened by the new instruments and techniques. These include an investigation of anomalous scattering from polished beryllium, which affects fabrication methods for optical systems used in satellite surveillance.

To achieve these improvements in mirror measurement technology, Takacs collaboratively developed a theory to predict the performance of what are called grazing incidence mirrors at x-ray wavelengths, incorporating unified figure and finish measurements.

Takacs and his colleague then embodied the new technology in two instruments — the Long Trace Profiler (LTP) and the WYKO NCP-1000.

The LTP, unique in that it can measure large optics without contact, checks curved or straight surfaces up to one meter long, with accuracy measured in billionths of a meter. It can measure the absolute radius of curvature of a surface, not the surface relative to a reference surface — a new design feature that would have revealed the flaw in the Hubble telescope mirror, which was tested relative to a faulty reference surface.

The patented LTP has become the standard for characterizing the figure of synchrotron radiation mirrors worldwide. Its commercialization is under way through a Cooperative Research and Development Agreement with a local small business, and two versions of it are in use at Lawrence Berkeley Laboratory.

The WYKO NCP-1000 is a short-length — up to five millimeters — surface-profiling instrument first developed by the University of Arizona and acquired by BNL in 1984. Takacs and his colleague adapted it to measure surface roughness of x-ray mirrors, and, in 1989, won a Special Award for Excellence in Technology Transfer from the Federal Laboratory Consortium for this work. Also, the technique they used to analyze data from this instrument was adopted by the International Standardization Organization (ISO) and incorporated into its new worldwide standard, ISO 10110, which defines specifications for the texture of optical surfaces. — Liz Seubert

Joseph Wall

According to William Studier, Chairman of the Biology Department, "Joe Wall's accomplishments in making the STEM a powerful tool for studying biological structures, in establishing a productive user program that brings great credit to BNL, and in continually improving and increasing the capacities of the facility make him an ideal recipient of a Distinguished R&D award."

Short for Scanning Transmission Electron Microscope, STEM is a device that uses electrons for forming greatly magnified images of biological specimens, to study the structure of proteins, DNA, membranes, viruses and the like. Incorporating the best features of the conventional transmission electron microscope with those of a scanning electron microscope, STEM has equal or better resolution and higher contrast than either of those instruments.

There are five operating STEMs used for biology in the world — and BNL has two of them. BNL's first STEM was under construction when Joe Wall came to the Biology Department in 1973. He brought with him his experience as part of the team developing the world's first STEM at the University of Chicago.

In addition to being responsible for the completion of BNL's STEM I, Wall is recognized for implementing "most of the design features that make STEM a versatile and reliable tool for structural biology," notes Studier. In addition, Wall is credited with research to develop procedures for limiting specimen damage due to preparation and radiation.

As a result of Wall's work to increase the practicality of STEM, it is now routinely used to resolve single atoms, as well as measure the mass, gauge the shape of macromolecules and map selected sites labeled with heavy atom clusters, which are developed at BNL by Wall's colleagues.

Since the primary goal of establishing a STEM facility at the Lab was biological research, not instrument development, "Wall was not satisfied simply to have the best possible electron microscope: he, with his colleagues, went on to establish a universally admired user facility, where biologists from BNL, universities and industry can productively study biological structures," comments Studier.

Developed under a grant from the National Institutes of Health since 1973 and operational since 1977, the STEM facility has hosted about 50 groups of researchers each year from the U.S. and around the world. In examining diverse specimens, STEM has produced many results that are at the forefront of structural biology.

To ensure the availability of state-of-the-art instruments to STEM users, Wall and his colleagues went on to commission STEM II in 1992, which has been used as a backup to STEM I, for mapping elements in macromolecules using electron energy-loss spectroscopy, and to develop and test instrument components.

Now, in addition to acquiring an atomic-force microscope and installing a cryogenic electron microscope at the facility, Wall is concerned with the construction of STEM III, which is scheduled to be on line in October 1993 and to be used for elemental mapping with specimens at the temperature of liquid helium.

— Marsha Belford

Traffic (cont'd)

displayed, the conflict monitor will immediately initiate a flashing operation at the intersection.

Though east-west lights and north-south lights will never be green at the same time, there are times when the first east or westbound light may be red, while the second one is green. Casey had expressed concern about this configuration and requested that the lights be green/green or red/red — thereby avoiding the potentially confusing situation of a red/green.

From the County's point of view, however, an important consideration is avoiding traffic jams within the intersection. "The traffic signal sequence . . . is not unusual for two closely spaced intersections," LaValle wrote. "The most significant feature of the sequence is what we call an 'inside clearance.' This 'inside clearance' allows vehicles between the two intersections to clear this area before additional traffic is permitted to enter."

Dual Left-Turn Lanes

To solve the problem of near misses and fender benders caused by drivers turning from two lanes to go south on William Floyd, Casey had suggested that the lanes in the intersection should have signs above them to match the pavement markings.

Acknowledging this problem, LaValle said the county would instead eliminate the dual left turn, by removing the left-turn pavement arrow from the westbound right-hand lane, and increase the signal time to accommodate this change. Though these changes were made in mid-November, the cold weather has so far prevented the painting of new arrows and the installation of signs indicating that the right lane is for through traffic only.

Peter Horton

An aerial view of the intersection of Princeton and Longwood Roads with William Floyd Parkway, with north at top and BNL at right.

'Signal Ahead' Signs

Signs on the southbound William Floyd Parkway indicate traffic signal ahead, Casey had observed, but due to the curvature in the road, drivers don't see the light until they are really close to it. He had suggested adding either a flashing light or a statement of the distance ahead to the sign.

Suffolk agreed. Pointing out that the current "Signal Ahead" signs are installed according to current standards, LaValle said they will be modified to indicate that signals are located approximately 1,000 feet away. Also, an additional signal head will be installed on the traffic pole in the southwest quadrant of the intersection facing southbound traffic.

These modifications are scheduled for completion by April 30.

North Gate Merge

Although there is a yield sign at the north exit from the Lab, Casey had written that off-site drivers going north on William Floyd in the evenings have complained that drivers exiting the Lab do not yield the right-of-way. He had wondered whether the acceleration lane is long enough to allow drivers to merge safely.

To increase the length of the acceleration lane, LaValle said, the county will revise the pavement markings at the north access from BNL onto William Floyd Parkway. This will be done as soon as weather permits.

Additional Changes

To increase safety at the main gate intersection, the County also plans two other modifications: The location of the stop lines on Longwood Road and on Princeton Avenue will be adjusted as soon as the temperature is warm enough for repainting, and louvers will be installed on the green signals that face the area between the north and southbound roadways.

Finally, out of concern that trees and shrubs may be hindering visibility at this intersection, BNL has asked the county to evaluate the adequacy of the sight distance for traffic eastbound on Longwood and southbound on William Floyd.

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ANITA COHEN, Editor
MARSHA BELFORD, Assistant Editor
LIZ SEUBERT, Reporter

35 Brookhaven Ave., Upton, N.Y. 11973
(516) 282-2345

Open to the Public

The following meetings are open to the public:

- **American Society of Mechanical Engineers, Long Island Section** — Guest speaker: John Andrews, Head, Energy Efficiency and Conservation Division, BNL's Department of Applied Science, "Energy Conservation in the Home," Tuesday, January 19, 7:30 p.m., Student Activities Center, New York Institute of Technology, Old Westbury; registration requested, call Tony Fresco, Ext. 7214.
- **American Nuclear Society (ANS), Long Island Section** — Guest speaker: ANS President David Rossin, "Signposts Ahead for Nuclear Power," to be introduced by Robert Bari, Deputy Chairman, BNL's Department of Nuclear Energy; Wednesday, January 20, 8 p.m., Three Village Inn, Stony Brook; for dinner reservations or information, call Roz Goldberg, 929-8300, Ext. 3774.

Outreach Workshop

Managing Stress

Unless managed well, stress can cause physical, mental and emotional strain. To help BNLers avoid this, "Stress Management From a Behavioral Medicine Perspective" is the next Outreach lecture.

Sponsored by the Employee Assistance Program (EAP) of the Occupational Medicine Clinic, the lecture will be on Tuesday, January 19, from noon to 1 p.m., by clinical psychologist Susan Dermit. All are invited.

Susan Dermit

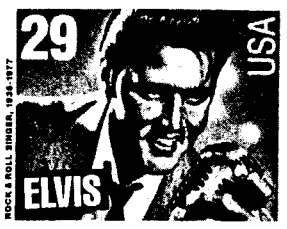
As Dermit will explain, people manifest stress in many ways, including physiological symptoms such as elevated blood pressure. By using a behavioral medicine approach, a person can reduce feelings of stress and see positive physiological changes — like a decrease in blood pressure.

Dermit will also describe the four components of a behavioral medicine stress-management program. To expand on these, she will follow up with a four-part stress-management workshop, on February 9, 16, 23 and March 1, from noon to 1 p.m., in Room B, Berkner Hall. Registration will be limited to 25 people.

Before taking her Ph.D. in clinical psychology from the State University of New York (SUNY) at Stony Brook, Susan Dermit earned an R.N., a B.A. in community nursing and an M.Ed. in counseling. She is now Director of the Behavioral Psychophysiology Laboratory, Associate Director of the Comprehensive Pain & Rehabilitation Center, and assistant professor in the Department of Psychiatry and Behavioral Science, all at SUNY at Stony Brook. Dermit is also in private practice in Port Jefferson.

To register for this workshop, return the bottom portion of the flyer recently sent to all employees to Diane Polowczyk, Bldg. 490, by Monday, January 20. To sign up for the four-part stress-management workshop, call Ext. 4567.

Elvis Stampede



From noon until the window at the Upton Post Office closed at 4:45 p.m., BNLers put on their blue suede shoes and stampeded to Bldg. 179 on Friday, January 8, when the long-awaited Elvis stamp went on sale.

Out of the 12,000 likenesses of the young Elvis that the Upton Branch of the U.S. Postal Service ordered for the occasion, some 11,200 were sold by the close of business that day. The remainder have been snapped up since then, but don't check into Heartbreak Hotel yet: Upton Postmaster Jeanine Fornsel anticipates that another batch will be available within two to three weeks.

Body Building Club

The weighting is over! The BERA Body Building Club has reorganized and wants your support. So if you want to increase your energy level, tone or strengthen with weight training, the time is now! Club membership for this year is $15.

For more information, contact Charles Gardner, president, Ext. 5211; Kara Roman, vice president, Ext. 3643; Elliot Levitt, treasurer, Ext. 2495; or Dave Dale, secretary, Ext. 3199.

North Room Key At Housing Office

Access to the North Room of the Brookhaven Center by BERA Clubs and individuals who wish to use it for recreational purposes is now provided through the BNL Housing Office, Bldg. 179B, between 8:30 a.m. and midnight weekdays and 4 p.m. to midnight on Sundays.

As a result, keys for the North Room are no longer issued by the BNL Police Group in Bldg. 50.

Arrangements to use the North Room when the Housing Officing is closed must be made in advance. For reservations for the North Room and rules governing its use, contact Jane Guido, Ext. 2553.

Women's Forum

The next meeting of the Women's Forum, which is conducted by Marion Davis-Parzen, will be Tuesday, January 19, at 10 a.m., in the lounge of the Recreation Building in the apartment area.

The group meets every third Tuesday of the month to discuss women's issues and to share experiences and concerns. Wives of Lab employees and guests are welcome; bring the children.

Note to Diners

The Cafeteria will operate only snack bar service from 9 a.m. to 2 p.m. on Monday, January 18, the Martin Luther King Jr. holiday. The Brookhaven Center Club will be closed on Sunday, January 17, but will open January 18, 5 p.m. to 9 p.m.

Cafeteria Menu

Monday, January 18 — Martin Luther King Jr. Day
Snack bar service - 9 a.m. to 2 p.m.

Tuesday, January 19

Soup: Chunky cream of chicken	.80/1.10
Entree: Sauteed liver & onions	3.35
Lite choice: Macaroni beef & tomatoes	3.20
Carvery: Hot roast beef sandwich	2.95
Grill: Swordfish steak w/rice pilaf	3.45
Taster's bar: Chicken nuggets (ounce)	.25

Wednesday, January 20

Special: Hot & sour soup	.80/1.10
Vegetable & shrimp egg rolls	1.25
Chinese beef & green peppers	3.65
Szechaun chicken	3.45

Thursday, January 21

Soup: Split pea	.80/1.10
Entree: Fried chicken w/biscuit	3.35
Lite choice: Linguine w/white clam sauce	3.35
Carvery: Hot corned beef sandwich	2.95
Grill: Oriental-style chicken cutlet	3.65
Taster's bar: Chicken wings (ounce)	.25

Friday, January 22

Soup: New England clam chowder	.80/1.10
Entree: Stuffed peppers	3.20
Lite choice: Baked catch of the day	3.45
Carvery: Hot turkey sandwich	2.95
Grill: N.Y. shell steak w/steak fries	3.65
Taster's bar: Chicken nuggets (ounce)	.25

Movie Night . . . Brookhaven Center
Wednesday, January 20 . . . 8 p.m
JFK . . . free popcorn

Computing Corner

Two "birds of a feather" gatherings will be held in the seminar room of the Computing & Communications Division (CCD), Bldg. 515, next week:

- A seminar on using a high-performance NFS file server in the BNL Unix environment is scheduled for Wednesday, January 20, at 2 p.m. A representative from AUSPEX Systems Inc. will explain how their network servers deal with large, heterogeneous workstation networks.
- A discussion on "Workstation for Compute Farm Users" will be held Thursday, January 21, at 2 p.m, giving Unix workstation users the opportunity to communicate their requirements to CCD.

Tennis Anyone?

The Tennis Committee will sponsor a night of tennis on Saturday, March 6, at the Eastern Athletic Club, Montauk Highway, Blue Point. The games will begin at 7 p.m. and end at 11 p.m. Three courts have been reserved for BNL employees, family members, and friends, at $15 per person. Since the number is limited, sign up and pay in advance at the BERA Sales Office as soon as possible. For more information, contact Rita Kito, Ext. 3320.

Atlantic City Trip

The next BERA-sponsored, one-day trip will be to Trump Castle and Casino on the Marina in Atlantic City, on Saturday, February 27. The initial cost will be $20, but the hotel-casino will give a $10 coin return, and a choice of either $5 towards food or an additional $2.50 in coins, and a $5 deferred-return voucher.

The bus will leave the Brookhaven Center at 9 a.m., with an extra pickup at LIE Exit 63, if necessary. Return will be about 11:45 p.m.

Tickets are on sale at the BERA Sales Office in Berkner Hall, weekdays, 9 a.m. to 2 p.m. For more information, call Carolann Zebrowski, Ext. 3347, Rosalie Piccione, Ext. 3160, or Kay Dellimore, Ext. 2873.

Arrivals & Departures

Timothy R. Connolly....Central Shops
Cynthia A. Loehr.....Saf. & Env. Prot.
Li Luan.....Chemistry
Dorothea Nash.....Staff Service
Edwin I. Njoku.....Saf. & Env. Prot.
Joseph S. Triolo Jr......Plant Eng.
Leland F. Willis.....AUI
Bruce E. Yanofsky.....Central Shops

Departures

This list includes all employees who have terminated from the Lab, including retirees:

William Simmons.....Reactor
Minghan Yi.....RHIC

The Brookhaven Bulletin is printed on paper containing at least 50 percent recycled materials, with 10 percent post-consumer waste.

Classified Advertisements

Placement Notices

The Laboratory's placement policy is to select the best-qualified candidate for an available position. Consideration is given to candidates 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, handicap or veteran status.

Each week, the Personnel Division lists new placement notices. The purpose of these listings is, first, to give employees an opportunity to request consideration for themselves through Personnel, and, second, for general recruiting under 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, or call the JOBLINE, Ext. 7744 (282-7744), for a complete listing of all openings.

LABORATORY RECRUITMENT - Opportunities for Laboratory employees.

LS 0181. FACILITIES AND PREVENTIVE MAINTENANCE SPECIALIST - Requires extensive experience in mechanical, electrical and architectural trades and broad knowledge in facilities maintenance. Responsibilities include assisting the preventive-maintenance coordinator and facility inspector in the performance of their duties, distributing preventive-maintenance work orders to respective shops, and working closely with trade supervisors. Performs inspections of plant facilities to determine condition, maintenance requirements and compliance with Plant Engineering's maintenance programs. Will update and maintain records for DOE compliance. Plant Engineering Division.

LS 0186. PAINTER A (temporary position) - Under minimum supervision performs wide variety of interior and exterior skilled painting operations on buildings, furniture and laboratory equipment. Prepares surface, removes paint, mixes paints and matches colors. Plant Engineering Division.

DD 5266. SECRETARIAL POSITION - Requires AAS in secretarial science or equivalent and excellent communication skills. Will provide varied secretarial support throughout the Division. Duties include the preparation of technical publications containing scientific equations, computer-aided generation of multimedia presentations and database management. WordPerfect 5.1 and thorough knowledge of both DOS and Macintosh systems required; familiarity with Word for Windows/Mac and TeX, desktop publishing skills and networking experience highly desirable. Instrumentation Division.

DD 0724. OFFICE SERVICES POSITION - Requires AAS or equivalent experience and excellent secretarial and communication skills. Knowledge of word processing required; WordPerfect 5.1 preferred. Familiarity with a variety of PC-based programs desired. Will provide primary support to the Housing Office and act as backup to Transportation and Division Offices as required. Duties will include general administrative functions, housing reservations and in-house support of automated reservations systems, including data management, preparation of billing documents, and liaison with residents, housekeeping and maintenance staff for scheduling maintenance and repairs. Staff Services Division.

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside candidates.

LS 0159. BIOLOGY ASSOCIATE POSITION - Requires a BS in engineering and a working knowledge of biology and chemistry. Knowledge of computer interfacing and instrument design is essential. Familiarity with UNIX, VMS, DOS and Macintosh operating systems is desirable. Skill in fabrication techniques and a knowledge of ultrahigh vacuum systems is highly desirable. Will be responsible for overseeing the daily operation of the HFBR biological neutron-diffraction facilities and an in-house x-ray diffraction facility. (reposting) Biology Department.

LS 8162. ENGINEERING POSITIONS - Requires a BS in engineering or equivalent capabilities, and experience in radioactive and hazardous-waste management activities. Demonstrated knowledge of RCRA, TSCA, DOT and NRC/DOE waste-management regulations is essential. Strong background in waste operations is highly desirable. Requires excellent organizational, and oral and written communications skills. Responsibilities include assisting the engineering and operations group in the management of hazardous and radioactive waste functions. Safety and Environmental Protection Division.

Motor Vehicles & Supplies

91 NISSAN SENTRA XE - 2-dr. coupe, 5-spd., sunroof, am/fm/cass., red, 29k mi., excel. cond., $7,500. Lisa, Ext. 7189.

91 CHEVROLET CAVALIER Z24 - sports coupe, blue, 6-cyl., 10k mi., ac, $10,500. Sharon, Ext. 3995.

91 GRAND CARAVAN LE - air bag, 17k mi., loaded, 7-pass., mint. Ray, Ext. 7313 or 325-2145.

89 JEEP WRANGLER - a/t, 6-cyl., 55k mi., hard/soft top, alum. mags, new tires, shocks, batt., am/fm/cass., $7,600. Chris, 744-1110 after 5 p.m.

89 GEO METRO - 4-dr., 5-spd., red, am/fm, ac, 50+ mpg, 92k mi., $1,995. Joe, Ext. 2898 or pager 0925.

88 TOYOTA TERCEL - h/b, ac, needs transmission work, best offer. Dave, Ext. 5465 or 264-0543.

88 SUBARU GL - a/t, ac, am/fm w/4 spkrs., new muff./conv., rear wiper/def., must sell, $2,500 or best offer. Miguel, Ext. 5427/2963 or 331-1903 eves.

86 PLYMOUTH VOYAGER - 2.6L, a/t, am/fm stereo, ac, 80k mi., v.g. cond., Ext. 2420 or 341-1020 eves.

86 HONDA CRX SI - low mileage, $1,000. Budd, 821-6821.

86 FORD TEMPO - excel. cond., $1,750 neg. 689-1539.

85 JEEP - 4wd, 5-spd., new tires, full cabin top, summer top, p/s, 63k mi., Calif. bronze, excel. cond., $4,000. Nancy, Ext. 4177.

84 BUICK REGAL - V-6, am/fm, p/s, p/b, $1,500 neg. Ext. 2420.

84 SAAB 900 - turbo, 4-dr., 5-spd., p/w, p/l, new brakes & clutch, am/fm cass., 80k mi., $3,500. Ext. 5919 or 744-5079.

83 CHEVY WAGON - ac, p/b, p/s. new tires, no rust, must sell, excel. cond. Uwe, Ext. 5640.

83 HONDA ACCORD - 5-spd., 4-dr., am/fm cass., ac, 100k mi., asking $1,200. John, Ext. 4187 or 929-8204.

79 PONTIAC LE MANS - new battery, exhaust, cat. conv., runs well, reliable, $800. Jim, Ext. 3372 or 821-0250.

78 MERCURY COUGAR - runs well, $450. Duke, Ext. 2957 or 289-3586.

HONDA ELITE LX50 - w/helmet, good cond., $400 neg. Jeff, 473-1658 after 6 p.m.

CAR STEREO - Panasonic, am/fm cass. player, $50. Donna, Ext. 2716.

Miscellaneous

BOOKS - *Stochastic Processes*, Doub; *Structure of Human Memory*, Cofer.; *Enzymes*, Haldane, best offer. Margaret, 473-9129.

CAR SEAT - Fisher Price, infant-4 yr. old, good cond., $25/firm. Paul, Ext. 2961.

MET OPERA TICKETS - Sat., Jan. 30, matinee, *Um Ballo In Maschera*, row K orchestra center. Ext. 3922.

SCHOOL JACKET - size 20, black & yellow Sachem colors, w/hood, never worn, no printing, $30. Ext. 5080 or 751-1884.

TOYS - spring-operated rocking horse, $10; pedal operated police car, $12; hobby horses, $5/ea.; baby bouncer, $8. Fred, Ext. 1007.

Wanted

CELLO - in good condition. Ext. 2587.

DOG SITTER - 2/3-10, 2 gregarious, young dogs, completely fenced yard, Miller Place. Doan, Ext. 7535 or 345-0462.

DRAWING TABLE - 31"x42" approx. or 24"x36" size. John, Ext. 7671.

GENERATOR - diesel or gasoline, used or new. Ext. 2411.

HOUSE OR APARTMENT - in or close to Brookhaven Town. Ext. 4192.

JEWELRY - costume, loose beads, for class project. Marilyn Gibbons, Ext. 2259.

MOTOR - 350 GMC or Chevy for 84 pickup or later, original or rebuilt. Todd, 369-2889.

OLD FOUNTAIN PENS - any and all makes, any condition, will pay cash. Catherine, 744-3383.

PEOPLE TO JOIN JODO - "The Way of the Stick," classes starting, men and women welcome. Rolf, Ext. 4810.

RECORDS - 33⅓ or 45 rpm, polkas any year, rock & roll, 1955-65. Frank, Ext. 3120 or 727-5096.

SKIERS - to ski Windham 1/20, $34; Hunter 2/3, $46; send payment to Augie Hoffman, Bldg. 510C

In Appreciation

I would like to express my sincere appreciation to all of my coworkers and friends for their expressions of sympathy following the loss of my daughter. — Larry Jones and family

Ads left out of this issue due to lack of space need not be resubmitted to appear in the next issue.