

LOS ALAMOS NATIONAL LABORATORY
CURRENTS

February 2008

*Bette Korber: Remembering NOAH's Ark
Earthquake-triggering hunch
Improving safety
MDs exchange ideas with PhDs*

Transforming the weapons enterprise

The National Nuclear Security Administration announced in December its complexwide preferred alternatives—changes to both work scope and infrastructure at all NNSA sites—that will enable long-term transformation of the nation’s nuclear weapons enterprise to one that is smaller and more responsive to the security challenges facing the nation.

We at Los Alamos will play a major role in this transformation, with substantial responsibilities in nuclear weapons design and engineering, supercomputing, plutonium research and development, limited pit manufacturing, and continued consolidation of nuclear facilities to a smaller and more efficient footprint.

The preferred alternative selection reaffirms that Los Alamos is first and foremost a national security scientific laboratory. The selection supports continued interdisciplinary excellence in theory, modeling, and simulation of high energy density systems. It confirms and builds upon the Laboratory’s world-leading role in actinide sciences—the study of elements from thorium to lawrencium—and acknowledges our demonstrated success in pit manufacturing.

Los Alamos continues to be critical to stewardship and will now take a lead role in complex transformation. “Because our nuclear weapons stockpile is decreasing, the United States’ future deterrent cannot be based on the old Cold War model of the number of weapons,” noted NNSA Administrator Tom D’Agostino in his rollout of the transformation plan. “Rather, it must be based on the capability to respond to any national security situation and make weapons only if necessary.”

We at Los Alamos are a keystone of this capability. Through the success of stockpile stewardship, we can now lay the groundwork for protecting our nation’s security well into the future through agile application of our science and engineering.

Properly executed, complex transformation is good for the long-term viability of the Laboratory and the other NNSA sites. It is responsible stewardship of taxpayer dollars that enhances scientific capability and safety and security and that can further enable stockpile reductions.

In the final analysis, a smaller, more efficient and responsive nuclear weapons enterprise results in cost savings, reductions in the stockpile, and leverage for our scientific and technical expertise to meet the most important national security requirements. Ultimately, our work becomes a more essential element of national security, and our success can help realize the strategy of capability-based deterrence.

Glenn Mara, principal associate director for Nuclear Weapons Programs



Glenn Mara stops by the Chemistry and Metallurgy Research Replacement Project construction site.

Sandra Valdez

Ron Barber honored with Defense Program Award of Excellence

Ron Barber of Research, Analysis and Technical Development (IAT-1) received a 2006 Defense Programs Award of Excellence for his role in the Pit Certification Project. Barber was the Engineering Certification project leader.

Beard to head stockpile manufacturing and support

Carl Beard is the new associate director for stockpile manufacturing and support. Beard has held this position in an acting capacity since June 2007. "Carl has been doing an excellent job as acting associate director, and I am confident in his ability to combine leadership skills with considerable engineering expertise to guide the SMS organization to its ultimate successes," said Laboratory Director Michael Anastasio.



William Feiereisen

Feiereisen appointed to advisory board at Virginia Tech

William Feiereisen of the Science Technology and Engineering Directorate (PADSTE) was appointed to the Virginia Bioinformatics Institute at Virginia Tech.

Feiereisen will serve as a scientific adviser for the Institute. He will provide regular external reviews of research strengths as well as guidance on new strategic scientific initiatives and funding opportunities. Feiereisen's scientific background includes research in computational fluid dynamics, high-performance computing, and mission-oriented projects.

Olivares named to NMBio board of directors

José A. Olivares, deputy division leader of Bioscience (B), was named to the board of directors of the New Mexico Biotechnology and Biomedical Association (NMBio). Established more than a decade ago, the NMBio works to support and develop the bioscience industry in New Mexico and El Paso, Texas. NMBio provides a forum for information exchange related to life science activities, develops initiatives to enhance small-business success, provides education regarding the New Mexico biosciences, helps establish collaborations, and publicizes the bioscience industry.

Clarke selected for Young Professional Development Award

Amy Clarke of Materials Technology-Metallurgy (MST-6) received a 2008 Young Leader Professional Development Award from the Minerals, Metals, and Materials Society. Clarke is a Seaborg Institute post-doctoral fellow.



Omar Juveland

The Bradbury Science Museum History Wall exhibit garnered Distinguished Technical Communication and Best of Show awards recently from the Society for Technical Communication.

Lab communicators win 29 STC Awards

Laboratory communicators won 29 awards in the 2007 Southwest Regional Publications, Art, and Online competitions sponsored by the New Mexico Kachina chapter of the Society for Technical Communication.

Three entries won Distinguished Technical Communication (DTC) awards in the Technical Art Competition

- Bradbury Science Museum History Wall exhibit
- Nutrition Poster Series
- LANL Energy Programs poster

Two entries won DTC awards in the Technical Publications Competition

- 1663 magazine
- LANSCE 2005 Activity Report

All five DTC-winning entries now compete in STC's international art and publications competitions. See a list of all Laboratory award-winning entries and their developers at int.lanl.gov/orgs/irm/cas/stc.shtml.



Photos by LeRoy N. Sanchez and Sandra Valdez

Laboratory researcher Bette Korber of Theoretical Biology and Biophysics holds a hand-woven basket she received from children she met through the Ark program in South Africa.

Remembering NOAH's Ark

a vessel of hope

They may not walk through the doors two by two, but the children who come to the Sitemobile Ark center in Nhlanguwini, South Africa, a small, rural village several hours' drive from Durbin, come seeking a safe haven and a chance for a better quality of life—much like those who sought refuge from the great flood in the Biblical Noah's ark.

For the many orphans and other youth left vulnerable by the AIDS pandemic in South Africa, programs like the Ark offer hope in what otherwise would be a bleak future. The Ark program is the brainchild of Nurturing Orphans of AIDS for Humanity (NOAH), a not-for-profit organization started to help children in South Africa affected by the AIDS pandemic. More than just the physical structure that houses the program, an Ark is a community network of care that is focused on not allowing children to suffer because they are orphans or otherwise affected as a result of AIDS.

People from all walks of life help sponsor Arks, and among them is Bette Korber of Theoretical Biology and Biophysics (T-10). A pioneering researcher in the study of the Human Immunodeficiency Virus and its genetic characteristics, Korber is keenly aware of the devastating impact HIV/AIDS has had on families in Africa, especially in South Africa. She notes that UNAIDS, the United Nations' joint program to address HIV/AIDS, estimates there are more than a million AIDS orphans in South Africa alone. And nearly 50 percent of expectant mothers in some of the pregnancy clinics in the most afflicted areas are HIV positive.

Korber's involvement with the Ark program began in 2004, shortly after she received an E.O. Lawrence Award, the Department of Energy's highest commendation for scientific achievement, for her basic theoretical research on the HIV virus. She also was honored for her contributions to the Los

Alamos database, a resource for HIV research around the world. With the award came \$50,000.

"When I received the award, my husband [James Theiler of Space and Remote Sensing (ISR-2)] and I talked about what we could do with the money. We decided it would be good to give something back," said Korber. "A colleague of mine who has worked extensively in South Africa, Dr. Bruce Walker, told me about NOAH, a program he thought was very inspiring. While doing my research on the HIV virus, I often used data from blood samples taken from expectant mothers who were volunteers, sampled in clinics in that area [KwaZulu Natal], so I decided to do something specifically to help their children. We decided giving to NOAH would be the right thing."

Started in 2000 by Gregory Ash, a South African plastic surgeon, NOAH has established more than 110 Arks in the Gauteng and KwaZulu Natal provinces of South Africa during the past seven years. With the support of more than 1,200 volunteers and local communities, the Arks now serve more than 33,000 children.

"Arks provide a place for the children to go after school to get help with their studies, use computers, and have a warm meal. The Ark is where they have a support system," said Korber.

Through the program children can remain in their family homes while learning skills that will help them improve their lives and the community in which they live.

In 2005, Korber traveled to South Africa to a scientific meeting and was able to attend the opening ceremony for the Ark she and some of her friends have funded.

"We arrived at the location of our Ark, and the entire village turned out to meet us. Everyone was there, including a Zulu regional prince, a gentleman they referred to as the Inkosi. The children were incredibly beautiful and lively, amazingly full of hope despite what they had each endured. There was traditional singing, dancing, and drumming, alternating with moving oratory. Each talk was repeated in Zulu and English," she said.

"Visiting the Ark that we started was very gratifying. It was good to see that it offers a lot of hope for the children," said Korber.

"I now have a few hundred little ones there [in Africa] to love, as well as my own two sons here. Helping those beautiful children, I think, was the grandest thing I've ever done," said Korber.

Korber and her family continue to offer hope to the children of South Africa through their ongoing support of the Ark in Nhlanguwini. Her research into unlocking the mysteries of the HIV virus also continues.

For more information about the NOAH program and Arks in South Africa, go online to www.noahorphans.org.za. To make a tax-deductible donation to this charity and others addressing the effects of HIV/AIDS on children, go to www.starfishcharity.org or to the Pediatric AIDS Foundation at www.pedaids.org.

'I now have a few hundred little ones there [in Africa] to love, as well as my own two sons here. Helping those beautiful children, I think, was the grandest thing I've ever done.'

Bette Korber

- Earns bachelor's degree from California State University, Long Beach in 1981; doctorate from California Institute of Technology in 1988.
- Becomes a postdoctoral fellow at Los Alamos National Laboratory in 1990, a staff member in 1993, and a Laboratory Fellow in 2002.
- Joins the Santa Fe Institute as an external professor in 2004, after a continuing affiliation that began in 1990.
- Receives 2004 E.O. Lawrence Award.
- Garners numerous awards, honors, and fellowships for her work with HIV/AIDS, including the Elizabeth Glaser Scientist Award, Pediatric AIDS Foundation, for continuing work on pediatric AIDS, 1997 through 2003.



Focal Point

Earthquake-triggering hunch pays off

ever wonder what success sounds like?

For Laboratory researcher Paul Johnson of Geophysics (EES-11), the “eureka moment” sounded like a whip crack. It was a sound that some of his research colleagues didn’t expect to hear.

Johnson had been following research by Joan Gomberg of the U.S. Geological Survey indicating that earthquake activity sometimes increases thousands of miles away from an earthquake epicenter, presumably out of range of the “aftershock zone” common for many quakes. He and several colleagues wondered how sound waves could trigger faraway quakes. His initial work on the topic with Gomberg and Xiaoping Jia of the Laboratoire de Physique des Matériaux Divisés et des Interfaces, Université de Marne-la-Vallée, appeared in *Nature* in 2005. In that work, they proposed how triggering could happen, supported by earthquake triggering observations.

More recently, Johnson contacted Chris Marone of Pennsylvania State University, who had developed a machine to mimic earthquake behavior. The machine squeezes plates atop a layer of tiny glass beads. The plates are similar to tectonic plates that surf above Earth’s mantle. Like tectonic plates, when enough stress is applied to the plates in the earthquake machine, they skitter across the glass beads—unleashing an earthquake that can be observed in a laboratory setting.

“I told Chris I wanted to test whether sound waves could trigger an earthquake,” said Johnson. “He was doubtful at first but welcomed a try.” Johnson gathered his acoustic equipment and traveled to Penn State to modify the earthquake machine.

To Marone’s surprise and Johnson’s surprise and satisfaction, sound waves applied for a short period just before an expected earthquake could induce smaller quakes.

“When the machine goes off and you get a quake, you get this really loud, sharp crack,”



Dixon Wolf

said Johnson. “We found that sound could cause a quake immediately. That was truly a eureka moment. The most intriguing aspect, however, was that the applied sound was ‘remembered’ by the glass beads, as manifested by delayed quakes, as well as delays in the occurrence of a larger, expected quake. We still are trying to understand how the memory is stored.”

Johnson, Gomberg, and Marone joined Heather Savage and Matt Knuth of Penn State in publishing their findings in a recent issue of *Nature*. The research ultimately may help explain the mysterious behavior of earthquakes worldwide.

Laboratory researcher Paul Johnson holds a block of acrylic plastic used in studying cracked solids by observing the interaction dynamics of elastic waves within solids. Ultimately this may offer more clues to understanding earthquake phenomenon.

YakTrax cleats slip over regular shoes to provide increased traction when the wearer walks on snow or ice.

Richard Robinson



Improving safety . . . one step at a time *employee involvement is key*

Slips, trips, and falls are a major cause of injury and accidental death in the workplace and home, according to the National Safety Council. And the Lab can attest that these types of accidents can happen even in the most safety-conscious environment. Since June 2006, more than 50 people have been seriously injured from slips, trips, and falls on Laboratory property. Many of these falls occurred on snow and ice last winter.

To help employees stay on their feet during icy conditions and get around the Laboratory safely this winter, the Lab's Voluntary Protection Program and the Institutional Worker Safety and Security Team purchased YakTrax snow and ice cleats and provided them at no cost to more than 3,000 employees who requested a pair. YakTrax cleats slip over regular shoes to provide increased traction when the wearer walks on snow or ice.

The Voluntary Protection Program and the Institutional Worker Safety and Security Team also purchased extendable combination ice scrapers and snow brooms for clearing windshields on government vehicles. These winter-focused efforts are

just some of the initiatives the program and team have undertaken to raise safety awareness across the Laboratory.

Los Alamos started its Voluntary Protection Program, based in the Environment, Safety, Health, and Quality Directorate, in June 2006. Since then, recordable injuries at the Lab have been reduced by 30 percent. The Worker Safety and Security Team was formed last year by Director Michael Anastasio to promote workforce involvement at the Laboratory. The team has representatives from every Lab directorate to ensure that workers have an opportunity to become involved in improving safety and security.

For more information about the Voluntary Protection Program and its five core elements (management leadership, employee involvement, work site analysis, hazard prevention and control, and safety and health training), go online to int.lanl.gov/esh/vpp/.

For more on the Worker Safety and Security Team and a list of WSST sub-teams across the Laboratory, go online to int.lanl.gov/esh/wsst/.

ChemCam heads to Jet Propulsion Lab

Rover launch scheduled for 2009



Roger Wiens of Space Science and Applications checks out the Laboratory's ChemCam engineering model scheduled for delivery to NASA the first week of February. The instrument shoots powerful laser pulses at rocks to determine their composition.

Shown mounted in two parts on the test stand, the full ChemCam flight model will be delivered to the Jet Propulsion Laboratory in July and will be launched to Mars in late 2009 as part of a new rover that will assess whether Mars ever was, or still is, an environment able to support microbial life.

For more information about the Mars Science Laboratory mission, go to mars.jpl.nasa.gov/msl/.

LeRoy N. Sanchez

Turning safety difficulties into successes

visiting MDs exchange ideas with PhDs

Last fall, a group of medical professionals from Children's National Medical Center in Washington, D.C., spent two days touring Lab facilities and interacting with researchers. These MDs found Los Alamos science intriguing, but they didn't come to talk science with PhDs. They came to talk safety.

"There is a national conversation on patient error that has amplified our desire to focus on safety culture, both for the benefit of patients and employees," said David Stockwell, a pediatric critical-care doctor and the designated safety liaison physician at Children's. "We are very interested in how an institution takes safety difficulties and turns them into successes, resulting in a much more safety-focused organization."

As with the Laboratory, safety is of utmost importance at Children's National Medical Center, where continuous improvement in safety is linked to a basic change in the institution's safety culture. An academic and clinical institution that strives for excellence in all segments of its operation, the 137-year-old medical center admits more than 11,000 children per year and treats about half a million pediatric outpatients during this same timeframe, with the majority coming from the District of Columbia area. Children's also employs about 430 medical doctors and is the ninth largest research program in the United States.

The doctors and administrators who toured Lab facilities, such as LANSCE, the High Magnetic Field Laboratory, and the Metropolis computing center, admitted that they initially were largely unclear on how their institution related to the Laboratory. Once they arrived, however, and began talking to employees and safety managers like Dick Watkins, associate director for Environment, Safety, Health, and Quality, and Bill Brady, chief of Occupational Medicine at the Lab, they found striking similarities.

"I was not sure what I was coming here for, but I got it," said Peter Holbrook, Children's chief medical officer and intensive-care physician. "Children's is a multifaceted, complex organization ... with a highly educated, independently minded workforce that has a lot of opportunity to make safety mistakes. Los Alamos also is a highly complex place with a highly educated and independent staff that does fairly risky work. So, the two institutions are analogous in many safety-related respects."

"The visit was unquestionably a mutual learning experience with a valuable exchange of ideas," said Watkins. "They saw a great deal of similarity between our issues and theirs. Beyond the breadth of the work at Los Alamos, I believe the Children's team was impressed by our efforts in the Voluntary Protection Program and human performance—people taking care of people is the key to safety improvement."

"The program at Los Alamos showed us that a bottoms-up approach can work," said Holbrook. "By going out to individual units and asking people to do self-assessments, which naturally vary from location to location, you reach out. You ask the people doing the work to identify risks, and you tell them you'll help develop tools to reduce the risks and that you'll monitor the situation to determine if the risks are actually reduced."

The visitors said they will take what they learned at Los Alamos and other institutions and begin a new safety program this year at Children's. Joining Stockwell and Holbrook from the medical center were John Cockerham, president of the medical staff; Brian Jacobs, chief medical information officer; Mary Anne Hilliard, chief risk officer; and Robert Keating, chief of neurosurgery.



'People taking care of people is the key to safety improvement.'



When it's snowing

In the event of inclement weather, Laboratory workers should call the Laboratory's UPDATE phone line at 667-6622 or toll free at 1-877-723-4101 for information about the Lab's operating status. The UPDATE phone line is the Lab's official, primary source for obtaining such information. The entire process for determining a delayed opening or Lab closure usually is completed by 5 a.m., and the Lab's operating status is available on UPDATE shortly thereafter.

Laboratory's protective force gets name change

Protection Technology Los Alamos, the Laboratory's protective force subcontract company, has a new name and operator. It is now SOC Los Alamos, part of a new company, SOC LLC. Day & Zimmermann, PTLA's current management team will remain in place, and over time, employees will see the SOC Los Alamos insignia replace the PTLA brand on uniforms and other protective force materials. Note that SOC is not an acronym; each letter is pronounced. For more information, contact Ken Freeman at 5-6081 or kenfreeman@lanl.gov by electronic mail.

Security: Cell phones

Be vigilant about where you leave your cell phone to avoid taking it with you into a Security Area.

Safety: Traffic safety calendars available

Traffic safety calendars for 2008 are available from the Industrial Hygiene and Safety (IHS) Division. The calendars feature entries from the children's traffic safety poster contest sponsored by the Laboratory. Call 6-0295 to request one.

Saving for retirement in 401 (k) plans

The start of 2008 is a fitting time to assess your retirement savings. Contributing to LANS 401(k) plans reduces taxable income and provides for retirement security. The TCP-2 Retirement Plan provides a 6 percent LANS match. Eligible employees may begin or change contributions to their 401(k) plans at any time.



Wellness Center

Wellness Center follows Lab operating schedule

If the Laboratory delays opening, has an early release, or closes due to inclement weather or other emergency, the Wellness Center follows the Laboratory operating schedule as announced to the workforce. Employees and other Wellness Center customers should not come to the Wellness Center when Laboratory management has determined that conditions are such that only essential workers should be at work. For more information, contact Phyllis Webb of the Wellness Center at 7-7166.



NNSA publishes proposed plan to transform the nuclear weapons complex

The draft Supplemental Programmatic Environmental Impact Statement regarding transformation of the nuclear weapons complex is online. The National Nuclear Security Administration distributed more than 2,000 copies of the draft SPEIS, and the public has until April 10 to review and provide comments. Nineteen public hearings will be held across the country starting this month. More information on NNSA's proposed complex transformation and a schedule of public meetings is online at www.nnsa.doe.gov/complextransformation.htm online.

February service anniversaries

Find the February service anniversaries online at www.lanl.gov/news/newsbulletin/anniversaries.

In Memoriam

- Greg Bayhurst, 58, died September 13, 2007
- Darrell Call, 69, died October 6, 2007
- Helen Hudgins, 81, died October 18, 2007
- Jim McClary, 70, died October 20, 2007
- J. Virginia Gardner, 81, died November 16, 2007
- Eugene Lamkin, 86, died December 12, 2007

Creating our future

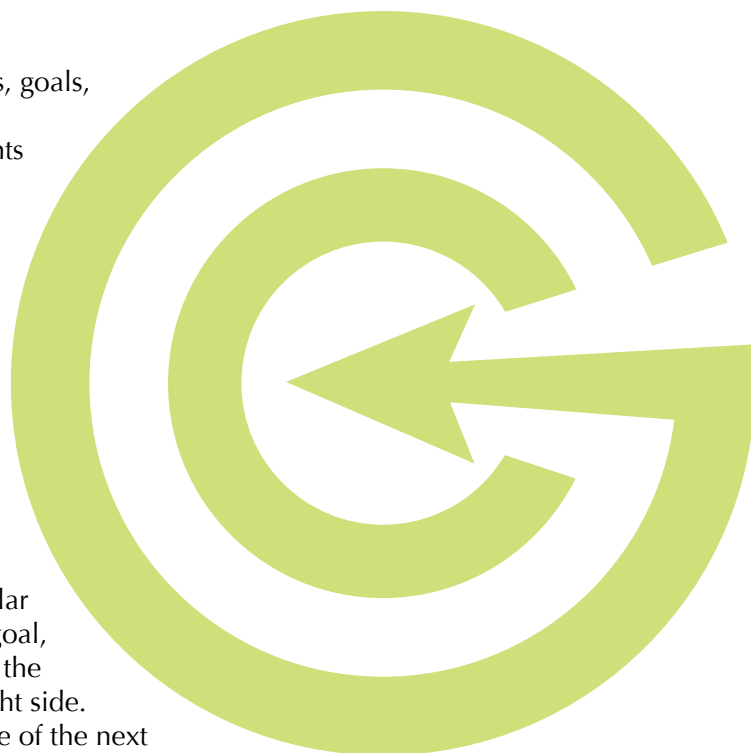
A new year traditionally brings a host of resolutions, goals, and commitments. And so it is with the Laboratory, which recently introduced several new commitments for 2008.

Each of these commitments is directly tied to one of the Laboratory's institutional goals, which range from safety and security to environmental stewardship, cybersecurity, and improved business practices. The new commitments are listed on the Goals and Plans Web site at int.lanl.gov/goals/index.shtml. Last year's commitments and their current status also are available at this site—most of the 2007 commitments are completed or nearing completion.

To find out what the commitments are for a particular goal and the progress being made in meeting that goal, as well as to read some related news articles, go to the Web site and click on a goal listed on the lower right side. Then click on "Commitments" on the lower left side of the next page to access that goal's commitments and their target dates for completion. The Strategic Alignment (CAO-SA) group in the Contractor Assurance Office tracks the Laboratory's demonstrable progress in meeting these commitments and notes the progress on the Goals and Plans Web site.

Each month, *Currents* will feature a success story or an accomplishment related to a goal or commitment. This feature should help employees better understand how efforts at the Laboratory support the 12 institutional goals and how meeting these goals bolsters the Lab's ability to apply outstanding science, engineering, and technology to national security.

For more information about the Laboratory's goals and commitments, write to goals@lanl.gov.



institutional goals ...

- Make safety and security integral to every activity we do
- Implement a cybersecurity system that reduces risk while providing exemplary service and productivity
- Establish excellence in environmental stewardship
- Assess the safety, reliability, and performance of LANL weapons systems
- Transform the Laboratory and the nation's nuclear weapons stockpile to achieve the 2030 vision, in partnership with the Complex
- Leverage our science and technology advantage to anticipate, counter, and defeat global threats and meet national priorities, including energy security
- Be the premier national security science laboratory and realize our vision for a capabilities-based organization
- Provide efficient, responsive, and secure infrastructure and disciplined operations that effectively support the Laboratory mission and its workforce
- Implement a performance-based management system that drives mission and operational excellence
- Deliver improved business processes, systems, and tools that meet the needs of our employees, reduce the cost of doing business, and improve the Laboratory's mission performance
- Communicate effectively with our employees, customers, community, stakeholders, and the public at large
- Develop employees and create a work environment to achieve employee and Laboratory success

Balance and resilience combat stress

Tom Locke, team leader for Psychology and the Employee Assistance Program, asks employees to appreciate the notion that how we give meaning to an event determines our level of stress, often more than the event itself.



Dixon Wolf

Think about what is most important to you, suggests Tom Locke, team leader for Psychology and the Employee Assistance Program (EAP). If it's your health, behave in ways that maximize that. If it's your family and friends, pay attention to and nurture those relationships.

“Commitment to who you are as a worker is important, and that needs to be balanced with other aspects of your life. That balance makes you a better worker, I think,” said Locke.

A former staff psychologist and consulting psychologist for a maximum security prison treatment program, Locke joined the Laboratory in 1997. He supervises psychological services delivered in the Fitness for Duty and Human Reliability programs and oversees EAP activities.

The recent announcement that no involuntary separations would be needed led Locke to believe he heard the Laboratory work-

force and community “breathe a sigh of relief.” But, he said, there continues to be unsettledness about the stability of funding and positions.

“We need to focus on that over which we have control—self care, attention to our family and friends, being as productive as we can in all that we do, working safely and securely,” he explained. “We need to be prudent about possible changes coming our way without obsessing about negative events that might never occur.”

In the face of stress, he added, we can and must take responsibility for increasing our resiliency, and stress-management efforts should be a part of our daily routine.

“I am talking about sleeping well, eating ‘reasonably,’ exercising, spending time with family and friends, and finding time for yourself daily to have some fun and relax,” Locke said.

Locke’s personal de-stressors are spending time with his wife and children, enjoying friends, exercising, reading, meditating, and remembering that he does not have all the answers.

“Each of us is responsible for addressing our personal stressors without expecting others to change for our benefit,” he said.

Occupational Medicine, the EAP, and the Wellness Center offer support. By taking advantage of these resources, said Locke, “you build your resilience and are better prepared to face the next challenge.”

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