Answering the nation’s call: Sandia part of team assessing aftermath of Hurricane Katrina

NISAC looks at industrial and economic consequences of infrastructure destruction regardless of cause

By Michael Padilla

What began as Sandia helping with computer simulations to determine the potential impact of Hurricane Katrina on infrastructures has turned into a series of nearly daily analyses of one of the nation’s worst natural disasters.

A team from Sandia and Los Alamos national laboratories is looking at Katrina’s long-range implications on infrastructure, including energy, telecommunications, agriculture, and the chemical industry.

Consisting of scientists, engineers, and economists, the group is part of the National Infrastructure Simulation and Analysis Center (NISAC), organized by the Department of Homeland Security.

NISAC began its work on the Saturday prior to Katrina hitting the Gulf Coast region. Sandia’s main goal is to look at flooding and infrastructure failures; LANL focuses on electricity systems.

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Yet as the price of gasoline gushes over $3 a gallon — with some analysts warning that $4 gas isn’t out of the question — Linda Stefoni, Sandia’s alternative commuting maven, is probably entitled to feel just a bit of vindication, a tad of “I told you so.”

For years, Linda has been trying to coax, cajole, encourage, and inveigle Sandians into considering alternatives to the one-person-one-automobile model of getting to work.

Now, Linda and her colleague Debbie Moore (both 3330) are handling a new torrent of requests from Sandians about their commuting options — “Options abound for getting to work” on page 4.

Debbie, at 844-RIDE, will help match you up with car pool partners, help you (if you need it) parse the city bus schedule to determine your best options, and otherwise point you in the direction of the resources and information you need to get to work alternatively. And oh, Sandia’s SERP office (844-4237) will sell you bus passes — monthly bus passes — for $20. At that price, and with bus tickets normally selling for $1 each way, you only have to ride 10 times a month to break even. Every additional ride that month is, effectively, free.

Over the years, Linda notes, Sandia has earned a reputation as one of Albuquerque’s most commuter-friendly employers. The Labs’ ongoing initiative to encourage alternative commuting has been held up by the City of Albuquerque as a model for other employers to follow.

With some 1,000 people registered for car-pooling (they get special parking privileges), and with perhaps 160 daily bus riders, 75 to 100 regular bicyclists, 60 van-poolers (traveling from outlying areas such as Belen and Moriarty) (Continued on page 4)

Getting to work a real pain in the ($3) gas
Alternatives to one-car-one-driver paradigm looking better and better

By Bill Murphy

All of a sudden, that Sandia car pool option doesn’t sound half-bad. And the thought of riding a city bus to work? Bicycling? Walking? Aaawww, no way.

As the price of gasoline pushes over $3 a gallon — with some analysts warning that $4 gas isn’t out of the question — Linda Stefoni, Sandia’s alternative commuting maven, is probably entitled to feel just a bit of vindication, a tad of “I told you so.”

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What’s what

It sometimes seems that pretty soon, every square inch of Sandia/New Mexico’s Tech Area 1 will be covered with buildings, walkways between buildings, construction sites, or fenced areas connecting all these. One result is that parking is becoming problematic.

It sometimes seems that, as you’re engaged in the hunt for a space for bigger and bigger vehicles – SUVs, kingcab/longbed pickups, custom conversion vans, etc. and navigating between rows of these supersized chariots is often complicated by vehicles whose drivers seem to have just turned into a slot and stopped – sometimes three or four feet short of the bumper and maybe a little askew.

When you’re on the verge of being late to work and already stressed by a seemingly hopeless search for a parking place, having to bob and weave your way back row after row of vehicles is not the way to start the day.

So, save a colleague from a before-work meltdown: Drive all the way to the bumper – especially if you’re parking one of the big ones.

Remember the rhyme you learned in one of those low-numbered grammar school grades, about the number of days in each month?

Thirty days hath September,
April, June, and November;
February has twenty-eight alone,
April, June, and November;
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Sandia’s device may revolutionize bio sample prep

iDEP quickly concentrates live pathogenic bacteria for speedier analysis

By Mike Janes

Sandia/California researchers have developed an enhancement to a well-known “force phenomenon” called dielectrophoresis that they say could revolutionize the way biological sample preparation is conducted. Sandia is actively seeking commercial partners to help bring the technology to the marketplace.

Known as an insulator-based dielectrophoretic device (iDEP), the new tool selectively — and very quickly — concentrates live pathogenic bacteria within large water samples. The technology development was internally funded through the Laboratory Directed Research and Development program.

iDEP can deliver detectable amounts of material in small sample volumes, eliminating any need for overnight culturing and significantly speeding up water analysis.

In addition to water analysis, the technology may have applications beneficial to other industries. “Medical diagnostics applications might include enabling detection of diseases that produce anomalous cell morphology, such as cancer, sickle cell anemia, and leukemia,” says Carrie Burchard (8529), who handles business development opportunities. “In laboratories, iDEP could contribute to differential sorting of live and dead cells in cell culturing, and allow for protein isolation and concentration, sample concentration and focusing, analytical chemistry, and mass spectrometry for proteomics and drug discovery,” she said.

iDEP also could enable verification of biological decontamination efficacy for viable cell populations — as contrasted to inactivated cells and denatured proteins. For homeland security and public health purposes, it could improve water analysis and spore and vegetative cell differentiation. In industrial settings, iDEP could separate nanoparticles and nanotubes for materials synthesis.

Commercialization opportunities

Sandia scientists are actively developing application-specific iDEP devices and architectures for concentrating and separating bacteria, spores, viruses, and other particles.

Commercial partners could help further develop the technology for a variety of applications:

• To sort between live and dead cells for cell culturing
• To analyze water purity for public utilities and public health agencies
• To concentrate and focus samples for proteomics research, drug discovery, homeland security, and public health
• To verify the efficacy of biological decontamination
• To sort anomalous cells to diagnose diseases such as cancer, sickle cell anemia, and leukemia
• To sort nanoparticles and nanotubes for materials synthesis applications and industry.

iDEP: How it works . . . and its already-demonstrated capabilities

How iDEP works

First reported in 1951, dielectrophoresis is the movement of particles toward concentrated electric fields. The magnitude and direction of this motion depends on the size and shape of the particle as well as on the difference in conductivity between the particle and the suspending fluid. Thus, cell types can be sorted dielectrophoretically on the basis of shape and size, and dead cells separated from live on the basis of their higher conductivity.

Conventional dielectrophoretic sorters place electrodes within a sampling device and use the nonuniform electric field adjacent to electrodes to provoke dielectrophoretic motion of cells. Unfortunately, these electrodes require costly microfabrication, produce bubbles and electrolysis products that can harm device operation, and can damage cells with their strong field gradients.

In contrast, iDEP places electrodes outside the device. Current from the electrodes conducts through the particle-bearing liquid into the device where patterned walls or insulating obstacles produce the required nonuniform electric field. This arrangement eliminates many of the disadvantages of conventional devices: insulating structures can be replicated economically, produce no electrolytic effect, and can be contoured to be gentle on cells.

Determined capabilities

iDEP devices have demonstrated the ability to perform the following functions:

• Discriminate and separate live and dead cells
• Differentiate vegetative and sporulated cells
• Differentiate cell types
• Selectively concentrate to solid density a variety of particles, including cells, spores, viruses, proteins, and inert substances
• Operate in continuous and batch modes
• Concentrate particles by 104x

In addition, Sandia researchers have demonstrated a wide range of device architectures that support the following:

• Processing of nanoliter- to liter-scale samples
• Manufacturing with a host substrate of any insulating and impermeable material, such as glass, silica, plastic, or ceramic
• Easy and cost-effective replication through injection molding and hot embossing

Sandia/California News

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Wireless communications

(Continued from page 1)

trolled operated weapons systems.”

Impulse technology

UWB — often called fast frequency chirp, super wideband, carrierless, or impulse radio — is unique since its classical form is non-carrier based communication and the FCC has allotted it a very wide frequency spectrum ranging from 3.1 to 10.6 GHz or 7.5 GHz, he says.

“While UWB impulse provides a new form of wireless communication, its impulse signal can also be used for radar,” says Timothy.

According to Timothy, the new wireless technology promises to be a gateway for a new generation of advanced sensors created by fusing UWB communication with radar. The new technology can be used to detect, and distinguish between, the movements of potential targets.

Tests

Based upon tests conducted at the KoolSpan Encryption Laboratory in Santa Clara, Calif., earlier this year, Sandia with KoolSpan Inc. demonstrated a wireless UWB network bridge with real-time 256-bit AES encryption for live-streaming video images generated from a surveillance camera or thermal imager. The tests used only microwatts of transmitted power, approximately 1,000 times less power than typically used by conventional wireless IEEE 802.11b or Wi-Fi. Timothy says research on the technology will continue and will eventually be used to help secure DOE labs.

Commuting

(Continued from page 1)

even a few daily walkers, Linda says, Sandia already has the infrastructure and cultural mindset in place for a really effective, consequential alternative commuting effort.

Linda says the numbers are pretty good, but come nowhere near tapping the Labs’ full potential. Linda says Labs — with no small support over the years from Sandia’s Benefits organization — got the Labs this far.

Speaking of $3-per-gallon gasoline, that seems to be one of those magic numbers, like the sound barrier, the 4-minute mile, or the five-cent gas station.

“Without the spreading of impulse energy over such wide frequency spectrum, the signal power falls near or within the noise floor, making these signals virtually impossible to crack,” he says. “Utilizing the immense available bandwidth of UWB also improves wireless performance and facilitates the increased data rate need by advanced sensors.”

Linda’s coaxing and cajoling — with no come nowhere near tapping the Labs’ full potential. Linda has something to do with alternative commuting. That is the key question was, “What would it take to get you to consider alternative commuting?” and the answer was “$3-per-gallon gasoline.” Says Linda:

“One guy even said, ‘When gas hits $3 a gallon, I’m selling my car.’”

Linda is nothing if not a pragmatist; she knows that not everyone will embrace commuting alternatives. And she knows that the alternative commuting effort is for everyone. But there is another piece to the puzzle. There is something else that is compelling.

Options abound for getting to work

Sandia encourages and supports a range of commuting alternatives that can save money, help the environment, ease the parking situation at the Labs, and even give you exercise. Options also include car pool, van pool, public transportation, biking, and walking.

If you need help determining which alternative is best for you, call Debbie Moore at 844-2101, the City of Albuquerque will provide a list of people located in your geographic area. The list will be mailed to you in the city in approximately four weeks.

For more information about Guaranteed Ride Home, etc. visit the City of Albuquerque Transit Department web site details bus schedules, fares, information about Guaranteed Ride Home, etc. ABQ Ride Customer Service can be reached at 243-RIDE (7433).

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The monthly Gold bus pass is available to Sandians at the discounted rate of $20 (regularly $28). Buses may be purchased at the Kirtland Air Force Base, Sandia Laboratory Federal Credit Union or through the SERP office in Bldg. 832.

Van Pool

Van pools, which may park in designated spaces in the lot south of the cafeteria, originate from Kirtland, Los Lunas, Moriarty, Edgewood, and Cedar Crest. Costs and schedules vary. Call 844-RIDE to obtain the contact information for the van pool in your area. As with car pools, van pool vehicles must display a placard.
Karla Causey’s household adds three relatives from hurricane-stricken New Orleans

By Erin Gardner

Three children, victims, are with family in Albuquerque, but this time not to celebrate the holidays.

Karla Causey of Supplier Information and Relations Dept. 10222 and her husband Garry, this year may be especially challenging. They have added two of their nieces and nephew under their roof, which was already covering her family of five (see front page photo). Karla received a phone call from Garry on August 30 asking her if it would be ok to house his identical twin brother’s children, victims of Hurricane Katrina. Their parents, Karry and Deanna Causey, are temporarily in Orlando, Fla. Garry works as a ramp agent for Southwest Airlines, which will station him in Orlando for the time being. Deanna works for a small company in downtown New Orleans. Their home in the Orleans Parish is covered by a fallen tree and filled with five feet of water.

After agreeing, Karla was informed that her nieces and nephew would be arriving in Albuquerque that very day at 2:30 p.m. Karla promptly contacted Eisenhower Middle School where her son Jared, 13, attends, to arrange for his niece, Blair, 11, and nephew, Justin, 13, to attend school the next day. “They were able to get them into school at Eisenhower the next day. They did a great job,” says Karla.

She was also able to register her niece, Meghan, 17, as a senior at Eldorado High School, where her twin sons, Jason and Jeremy, 15, attend as well.

Blair and Justin were the first Hurricane Katrina victims to start attending school in Albuquerque.

“The are out of school this semester. “They were able to get them into school at Eisenhower the next day. They did a great job.”

Karla Causey

“They come out for Christmas, but full-time, will add many expenses,” says Karla.

Meghan, Blair, and Justin arrived in Albuquerque with small duffle bags, which included a couple of outfits and flip-flops.

Karla and Garry face the expenses of purchasing new clothes and school supplies for the three, buying more groceries, and driving their gas-guzzling SUV to get the children to and from school.

“People here in Procurement have been wonderful, a tremendous help.”

Karla Causey

Meghan, Blair, and Justin seem to be adjusting well to their new home. According to Karla, they like their new schools, and people have been very friendly to them.

“The hard part for them, however, is they are unable to contact many of their friends to see where they are and whether they are OK at this very chaotic time.

According to Karla, it will be at least a year before New Orleans will be rebuilt because of the mass destruction Hurricane Katrina left behind.

KATRINA’S POWER devastated the Gulf Coast. In the inset photo, Katrina roars toward the US mainland — again.

The storm had already pounded Florida before regaining strength over the Gulf of Mexico. (NOAA photos)

SC ’05 deadline requires immediate response from interested Sandians

If you want to apply, apply today

Researchers interested in participating in the Advanced Simulation and Computing (ASC) program for the Supercomputing “05 convention in Seattle, Nov. 12-18 need to submit their proposal by Sept. 19, says Neil Pundt (1423), who leads the tri-lab effort there this year.

The ASC exhibit’s theme, “Visualize the Difference,” will emphasize contributions that advance high-end computing.

Project requirements and forms are available at the tri-lab web site http://www.lanl.gov/conferences/sc05/index.html.

Ongoing analysis

The pre-event analysis included an estimate of outages to electric power and wireless telecommunication infrastructure due to wind damage, and an estimate of the potential impacts on other infrastructure sectors based on projected power outages, including identification of critical assets in the storm’s path.

The post-event analysis includes almost daily reports on implications for recovery and rebuilding operations based on known damage to infrastructure. This also includes identification of critical electric power substation/plant generation facilities for balanced restoration and operation of the power grid in the southeastern United States.

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Sandia vols answer call — literally

Sandia provided 60 volunteers to staff a Red Cross/KOAT-TV telethon Friday, Sept. 2.

“We were able to fill all of the shifts (6 a.m. - 7 p.m.) in about an hour on Thursday afternoon,” reports Amy Tapia of Community Involvement Dept. 3652. “Sandians are incredible volunteers!”

THE SANDIA TEAM consists of Chad Davis, Sharon Deland, Sue Downs, Mark Elliot, Dean Jones, Katherine Jones, Vern Loos, Andy Scholard (all 6222); Nancy Brodsky, Theresa Brown, Steve Conrad, Tom Corbet, Jim Ellison, Paul Kaplan, Louise Mafrt, Robert Taylor, Adam Turk, Lillian Snyder, Vanessa Vargas (all 6222); Lee Byun, Bill Fogelman, Kevin Stamber (all 6226); and Andrew Kazansky (6032).

THE SANDIA TEAM

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KATRINA’S POWER devastated the Gulf Coast. In the inset photo, Katrina roars toward the US mainland — again.

The storm had already pounded Florida before regaining strength over the Gulf of Mexico. (NOAA photos)
Benefits organization explains Sandia 401(k) Savings Plans — A fresh look...and some changes

This is the fourth article in a series discussing benefits and health care plan issues, prepared by Health, Benefits, and Employee Services Center 3300.

The Savings Plans and Benefits teams have come together to bring you the next part in the series of articles around your Benefits at Sandia. In this article you will learn about the new Sandia Fund Structure and a few related fund changes — and it’s good news.

Sandia is exceptional in many ways, and with regard to the Savings Plans our population in general does an excellent job at saving for retirement. However, a majority of Sandia Savings Plans participants select an investment mix upon initial enrollment in the Plan and fail to revisit and reassess their account. Yes, the idea is to invest for the long term, but it is also important to reevaluate your strategy with any major life event, when changes are made to the Plan, and even as retirement draws near. The new Sandia Fund Structure has been created to encourage you to take a fresh look at your Sandia 401(k) Savings Plan.

So, whether you looked at your account yesterday or are now wondering if you are even enrolled, the new Sandia Fund Structure is built for you.

Purpose

The purpose of the new layout is to give you several pieces of information at a glance to help you create a diversified portfolio of investments that may be right for you. Broad asset categories are identified to help you more easily determine higher and lower risk funds. The structure also identifies funds that provide one-step diversification in the pre-mixed strategies, and it separates funds with exposure to broad asset classes — the Asset Class Funds layer — from the additional Sandia Fund options.

How It Works

The new Sandia Fund Structure works by identifying the broad asset category of each fund, and grouping the funds into two basic strategies — giving you the option to choose a pre-mixed strategy or to build your own.

Look at the Structure in the chart on this page, and you will see the broad asset categories indicated in the key near the top. The broad asset categories are, from left to right, Short-term Bond, Bond, Mixed Investment, and Stock. It is important to note that, in general, short-term investments have less investment risk than bond funds, and bond funds have less investment risk than stock funds. Because blended funds are a combination of short-term bond, bond, and stock funds, the risk associated with those funds tend to fall somewhere between the two categories. (Please remember that past performance is not a guarantee of future results. Before you invest in a fund, it is important to review prospectuses and other fund information.)

Each Sandia fund option falls into one of these asset categories based on the investment focus and management strategy. You are able to determine your broad asset category of each fund by looking at the color, and/or the abbreviation indicated in the key near the top. The broad asset categories are, from left to right, Short-term Bond, Bond, Mixed Investment, and Stock. It is important to note that, in general, short-term investments have less investment risk than bond funds, and bond funds have less investment risk than stock funds. Because blended funds are a combination of short-term bond, bond, and stock funds, the risk associated with those funds tend to fall somewhere between the two categories. (Please remember that past performance is not a guarantee of future results. Before you invest in a fund, it is important to review prospectuses and other fund information.)

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A second option is to Build Your Own Investment Strategy by selecting from among any of the Savings Plans fund options, including, but not limited to, the fund options in the Asset Class Funds and Additional Fund Options layers. The Asset Class Funds layer contains lower-cost fund options that can give you exposure to broad asset classes. An asset class is a way to group investments by risk and return characteristics: bonds and stocks are two examples. These fund options, which are index funds, passively manage the funds’ assets so that their values follow the value of the market, and fits in the Asset Class Funds layer. The final change is to the fees for three of the existing funds. The new fund that will be added to the Savings Plans, effective Nov. 1, is the Diversified Bond Fund (the Passive Bond Market Index Fund L, managed by State Street Global Advisors). It is an index fund providing exposure to the US bond market, and fits in the Asset Class Funds layer. The final change is to the fees for three of the existing funds. The new fund that will be added to the Savings Plans, effective Nov. 1, is the Diversified Bond Fund (the Passive Bond Market Index Fund L, managed by State Street Global Advisors). It is an index fund providing exposure to the US bond market, and fits in the Asset Class Funds layer.

Contacts...

*Sandia internal web — http://www-irn.sandia.gov/HR/benefits/401k/Fund_Structure.htm (lots of information here, including an online overview)*

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Elected officials attend second annual briefing on small business programs at Sandia

New Mexico congressional, state, and municipal elected officials and their representatives attended the 2nd Annual Elected Officials Briefing on Small Business Programs at Sandia on Aug. 1. They were greeted by Al Romig, Sandia’s deputy director for integrated technology programs, who provided a current look at Sandia. Small business clients/suppliers presented their products and services, as well as their experience interacting with Sandia through a number of programs, including the New Mexico Small Business Assistance Initiative, the Mentor Protégé Program, the Mini Trade Fair, and the Supplier Showcase & Matchmaking Event.

Sandia’s Small Business Team (10102 and 10222) was introduced to the elected officials, and directors Bonnie Apodaca (10200) and David Goldheim (10100) gave briefings on program specifics. Hosts were managers Theresa Carson (10222) and Vic Chavez (10102).

Organizers Mariann Johnston (10102) and Toni Leon Kovarik (10222) say survey results were positive and that the group believes this is a useful event to continue and expand in the future.

— Toni Kovarik (10222)
Sci-Tech park wins national economic development award

Sen. Pete Domenici, R-N.M., reported last week that the Sandia Eubank and Technology Park, outside of Eubank Gate, is being recognized by the federal government for excellence in generating economic development throughout New Mexico.

Domenici said the Economic Development Administration (EDA) has selected the Sandia tech park to receive its 2005 Excellence in Technologi- zed Economic Development Award. The honor is among those chosen as part of the Department of Commerce’s 2005 Excellence in Econom- ic Development Award program.

"The Sandia Science and Technology Park is one of the most dynamic areas in the state in terms of job creation, research opportunities, and sheer potential high-tech breakthroughs," Domenici said. "This honor is well- deserved and highlights how well a technology park can work." Excellence Award winners will be formally honored at the EDA Symposium for 21st Century Economic Development on Sept. 22 in Arlington, Va.

Sandia’s Jackie Kerby Moore (10105) is the park’s executive director. "The Sandia Science and Technology Park is very proud to receive this award from the Economic Development Administration," Jackie told the Las Vegas Business Press. "The EDA has been key to the evolution of the park, as its funding enabled us to put in a state-of-the-art telecommunications system that has been essential to attracting high-tech companies." The Sandia Science and Technology Park was created to attract high- tech jobs to the Albuquerque area.

In August, for example, ground was broken at the technology park for Sandia’s Computer Science Research Institute (Lab News, Aug. 19) — the fifth new tenant to locate at the Sandia Science and Technology Park during the last 90 days alone.

Management promotions

New Mexico

Kristin Flores from SMLS, Property Management and Real- pposition Applications, to Manager, Logistics Operations and Business Office 10262.

Kristin joined Sandia in 2001, as a graduate student intern in the former Soviet Union Cooperative Initiatives Department.

In 2003, Kristin became a limited-term employee in Property Management and then moved to SMLS. In Property Management she managed the High Risk Property Program, the Government Furnished Property Program, and the Database Accuracy Program, along with a wide range of programmatic initiatives.

Kristin was recently awarded the “2005 Outstanding Administrative Manager/Advisor” award at the 10th Annual Student Internship Program Symposium.

Sandia sponsors Filipino American conference this weekend at Marriott

The Filipino American Foundation of New Mexico announces a Filipino and Asian American Conference to take place this weekend (Sept. 16-18) in Albuquerque at the Marriott Hotel on Louisiana Blvd. and I-40. Sandia is one of the major sponsors, along with the City of Albuquerque and several local businesses.

The event will be the first Philippine and Asian-American function of its type in New Mexico catering to a national audience. It is expected to attract more than 200 participants. Its purpose is to promote “Visi- bility through Empowerment” among the Filipino and Asian American community.

Topics for discussion include political activities, eco- nomic development, immigration and naturalization, dual citizenship, labor issues, education/literacy, diver- sity in the workplace, medical issues, entrepreneurship, dual citizenship, labor issues, education/literacy, diver- sity in the workplace, medical issues, entrepreneurship, diversity in the workplace, medical issues, and environmental justice.

For more information, visit the conference website at http://www.naasconferencemn.com or call Emilie Underwood at (505) 255-2060.

Sandia’s LDRD program shines in review

Sandia’s Laboratory Directed Research and Development (LDRD) program had its day in the sun last month at a program review meeting in Livermore, Calif. Representatives of the three NNSA labs and other federal agencies attended the three-day session, Aug. 23-25.

Sandia’s FY 2005 LDRD program funds 410 projects across 38 areas of investment, LDRD man- ager Hank Westrich (1011) told attendees. Sandia LDRD projects are responsible for 40 percent of issued patents at the Lab and 30 percent of the Lab’s total income for patent licenses, he said.

Both of the Labs’ 2004 R&D 100 Award win- ners were based in LDRD projects, Hank said. The program is also helping with Sandia’s goal of attracting and retaining young and tal- ented staff members. More than 50 percent of Sandia’s postdoc staff were supported by the program, and almost half of the full-time employee hours during the year were from staff with less than five years experience at Sandia.

The meeting was also an opportunity for Sandia to showcase the value of its LDRD program to other agencies. Representatives from the Department of Homeland Security, Department of Defense, and other organizations attended the tri-lab review. "Attendees felt the benefit of the LDRD program is clear," Hank said. — Will Kane

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This article was written by Monte Morris and originally published in Connections, the NNSA Kansas City Plant newsletter.

How do people in three different states work together to develop a new product or manage production of an existing product? With a lot of phone calls, teleconferences, videoconferences, and visits.

"Building parts for the weapons complex requires that facilities work together," says Steve Davis, technical manager in firing systems at the Kansas City Plant. Representatives from the laboratories and production facilities form product realization teams to ensure the integrity of products, from design through production.

Associates at the Kansas City Plant work with their counterparts at labs throughout the weapons complex to build products for national defense.

Kansas City Plant principal engineer Vic Pace is a core member of a team that works on W80 Firing Set, part of the WES SubAssembly.

The team has worked together for more than three years to ensure that the subassembly is problem-free.

Open lines of communication

Pace says the team works well together because the lines of communication are open. "The labs keep us informed and involved in design issues," says Pace. "Our team has worked together from the beginning to make sure the design is producible."

Pat Smith, principal member of technical staff at Sandia Albuquerque leads this team. He's part of the NNSA Kansas City Plant work with their counterparts at labs throughout the weapons complex to build products for national defense.

Three Sandia scientists and one former Sandian who is now a professor at Texas A&M University have recently published a book titled Applied Dynamic Programming for Optimization of Dynamical Systems.

The current Sandia authors are Rush Robinett III (6210), David Wilson (6634), and Richard Eisler (4547). The former Sandian is John Hurtado.

The book's publisher is the Society for Industrial and Applied Mathematics of Philadelphia.

Rush says the book presents a "broad cross-section of dynamic programming (DP) techniques applied to the optimization of dynamical systems based on the results of over 10 years of research and development at Sandia by the authors."

"The main goal of the research effort was to develop a robust path planning/trajectory optimization tool that didn't require an initial guess," Rush says. "The goal was partially met with a combination of DP and homotopy algorithms."

The book started as a single chapter in another book — Flexible Robot Dynamics and Controls — published in 2002 and co-authored by Rush, Richarid, and David, as well as Clark Dohrmann (1524), John Feddema (6634), Gordon Parker, and Dennis Stokes.

Research scientists, practicing engineers, and engineering students with backgrounds in dynamics and controls will be able to develop and apply the DP algorithms in the book to their particular problems.

"The organization of the book makes it possible for readers to actually use DP algorithms even before thoroughly comprehending the full theoretical development," Rush says. "This should appeal to practicing engineers and professionals. The book is also suitable in engineering academia, as either a reference or supplemental textbook for graduate courses in optimization of dynamic and control systems."

— Chris Burroughs
About the National Hispanic Cultural Center

The National Hispanic Cultural Center (NHCC) is dedicated to the study, advancement, and presentation of Hispanic culture, arts, and humanities. Since its grand opening in 2000, the NHCC has staged over 20 art exhibitions and 400 programs in the visual, performing, and literary arts. Programs have featured local, national, and international artists, scholars, and entertainers. The NHCC provides venues for visitors to learn about Hispanic culture throughout the world.

In 1998, a 16-acre site was chosen for the $34 million project along the east side of the Rio Grande in the heart of the historic Barelas neighborhood in Albuquerque. Since then, the project has grown to encompass over 50 acres with an estimated cost of over $50 million. Barelas, a traditionally Hispanic neighborhood, has historically been a crossroads for New Mexico’s people. The community was settled for its proximity to a natural ford in the Rio Grande and to the Camino Real, the Spanish colonial era Royal Road used primarily for trade between Mexico and northern New Mexico.

The architectural design of the NHCC has been created to accommodate a wealth of cultural programs in the visual, performing, media, and literary arts. The various buildings and structures speak to the history and culture of Hispanicity with features recalling styles from Spain, Mesopotamia, and early New Mexico.

The National Hispanic Cultural Center enjoys the broad support of the New Mexico State Legislature as well as the federal government. The NHCC is part of the State of New Mexico’s Department of Cultural Affairs along with seven other state museums and five state monuments.