

Benefits Choices 2008



Benefits Choices 2008, Sandia's annual open enrollment period, continues through Nov. 9. For information about upcoming benefits fairs, to determine if you need to make changes, and to get answers to other benefits-related questions, visit the Open Enrollment website at

www.sandia.gov/resources/emp-ret/emp-oe/.

Sandia LabNews

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Changes at Tech Library get Sandians' attention



Photo by Randy Montoya

By Neal Singer

What is it about a library? The slightly musty smell, the thousands of old minds residing between forgotten cardboard covers whispering, "Read me, I've information none of the new books will tell you?" Standing among old volumes is not exactly like being in a house of worship, but it can generate a cousin to that feeling of the sacred.

For this and other reasons, as scores of Sandians have attested in often-impassioned posts to an internal blog site maintained by senior technical manager Wendy Cieslak's staff at ST&E Strategic Initiatives (1010), Sandians will put up with many things but find it hard to swallow the closure of the physical plant that houses the Technical Library, in existence as long as Sandia.

David Williams, director of Information Solutions and Services Center 9500, says he respects the perspectives offered by Sandians in the blog, but says he believes that many of the posts reflect a lack of information about what is planned for the library.

"This isn't a story about a library closing; this is a story about laboratory transformation," says David. He says the library, while it has been an irreplaceable asset for the Labs for decades, is

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'We are not going to become information-impooverished,' says CIO Art Hale

In the few days after information about changes at the Technical Library became widely known, scores of Sandians posted comments on an internal forum. Most of the comments expressed dismay and frustration over the decision, complained about the way the information was communicated, and made the case that various services being eliminated or curtailed are important to the posters' work. Comments from Sandia Chief Information Officer Art Hale, who is also the director in charge of the library, were posted on the forum, offering a perspective that had been missing from the discussion. Here, in a slightly edited form (to conform to Lab News style) is what Art wrote in the posting:

In making the changes to Sandia's library services, we are taking action based on a study that was conducted of the Technical Library by a well-recognized research and consulting company that advises publishers and information providers. The study included the resources the Tech Library pro-

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How to solve the most 'wicked' problems

Findings suggest people work as well — or better — individually

By Chris Burroughs

What's the best way to solve a wicked problem — by working in a large group sharing ideas via the web or as individuals? That's the question George S. Davidson (1400) and his research team attempted to resolve this summer in an experiment funded by Sandia's internal Laboratory Directed Research and Development (LDRD) program.

The research, conducted by George, Courtney Dornburg (12335), Susan Stevens (12335), Stacey Hendrickson (6761), Travis Bauer (6341), and Chris Forsythe (6341), yielded some surprising results.

"In this day and age of email and the Internet, our expectations were that computer-mediated group brainstorming, i.e., across the web with no face-to face contact, was going to have the best results," George says. "What we found, however, was that people working as individuals were at least as effective and possibly more so than those brainstorming in a group over the web when trying to solve wicked, tangled problems, both in terms of quality and quantity."

George assembled a team that consisted of himself, three psychologists (two of them PhD students), and two cognition researchers to investigate tools and methods for bringing large numbers of people together to solve difficult problems via the web. The team anticipated that the group brainstorming could result in a huge pool of ideas that might lead to solutions. The

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Labs restructuring challenges take front and center during Tom Hunter's all-hands meeting

By Bill Murphy

Note: On Oct. 23, Labs Director Tom Hunter conducted the first all-hands meeting of the new fiscal year.

The hour-and-a-half session included about 45 minutes of prepared remarks by Tom and 45 minutes of questions and answers. Tom discussed current labs issues and concerns in some detail. The following story highlights just a few of the key points raised by Tom. To hear Tom's comments in their full context and complete detail, go to the video of his presentation at <http://ln.sandia.gov/HunterOct07>.

During his all-hands meeting this week, Labs President and Director Tom Hunter spelled out several of the key challenges facing Sandia over the next several years, none bigger, perhaps, than the challenge to remain cost-competitive as the Laboratories engages a broader set of customers than it ever has.

Making the Labs cost-competitive, Tom told a full house at the Steve Schiff Auditorium and participants video-linked from several other Sandia sites around the country, is at the core of Sandia's

strategic plan.

Achieving that goal, he said, can only be done by reducing costs substantially over the next few years. That task will be complicated by the fact that by FY11 the Labs for the first time in decades may be required to invest as much as \$100 million in the Sandia pension fund.

What Sandia is faced with, Tom said, is an environment of "customers who expect to pay less and costs that will go up." That's a dilemma, he said, that can only be resolved by cutting those costs over which Sandia does have some control.

A portion of the cost-savings, Tom said, will come via a workforce restructuring plan that will reduce the size of the Integrated Enabling Services (IES) Strategic Management Unit. The plan, which was deployed last year, calls for a reduction of some 200 IES employees during FY08. Ultimately, the plan aims for a reduction of several hundred

employees by FY11.

Tom emphasized that the nuclear weapons program at the Labs will employ roughly the same

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TOM HUNTER

Photo by Randy Montoya



Accident rate down

Two years ago, the Labs began to make a special priority of reducing the work-related accident rate among Sandians on the job. The latest data show that the safety initiatives are making a real difference. Story on page 6.

Also inside . . .

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What's what

It's always good to know where you came from, and Chuck Loeber is going to remind us of that with a three-part colloquium in November titled "History of the Nuclear Weapons Complex." It's another fine presentation of the Technology Symposium series.

The first part will be "1905 to 1945: Relativity and other scientific developments, nuclear fission, World War II, Manhattan Project, and the German Atomic Bomb Program," Nov. 7. Subsequent offerings will be "1946 to 1959: Espionage during the Manhattan Project, Atomic Energy Act, Cold War begins, thermonuclear weapons, nuclear weapons tests, and test sites," Nov. 12; and "1960 to 2007: Performance improvements, Berlin Wall, Cuban Missile Crisis, nuclear weapons accidents, safety and security improvements, Cold War ends, and the post-Cold War challenge," Nov. 19.

All three sessions will be presented in the Steve Schiff Auditorium, noon-1:15 p.m., and all will require a badge for admittance. They will be available on videotape at the end of the series.

Chuck had a 30-year career with the federal government - 12 with the Department of the Army and 18 with DOE - then a 10-year stint with Sandia before retiring in 2005.

It's always good to know where you came from. Not just to aggrandize your origins, but for perspective on why you're where you are. Sandia is an invaluable and treasured place because of what it has given to the nation. And in uncertain times, like these, it's important to remember that.

* * *

If you dread housecleaning, as I do, here's a comforting concept: Dirt and dust are natural, so just leave 'em in place. If you do, you're living in a natural environment unpolluted by chemical furniture sprays or polishes. Think Wild Oats or Whole Foods - all natural stuff.

And those spots on the floor where the ice that didn't make it from the fridge door dispenser into your glass melted? Water and dirt. What's more natural than that?

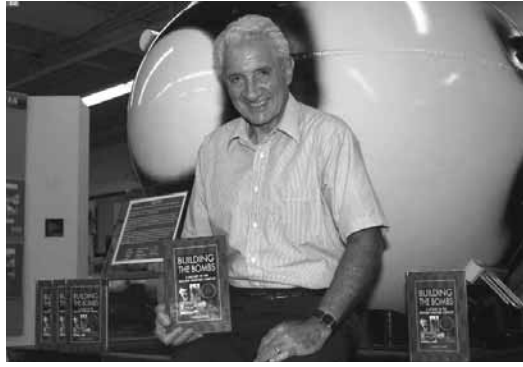
* * *

A parting thought. . . .

There may be an opportunity to address our budget dilemma that hasn't occurred to anyone up to now.

Next Wednesday is Halloween. We could all put on funny faces and costumes and go trick-or-treating in Washington. Might make as much sense as some of the other funding rituals that go on there.

- Howard Kercheval (844-7842, MS 0165, hckerch@sandia.gov)



CHUCK LOEBER at the National Atomic Museum in 2002. (Photo by Randy Montoya)

2008 R&D 100 awards competition begins

Sandia is soliciting entries for the prestigious 2008 R&D 100 awards. This annual competition, conducted by *R&D Magazine*, recognizes the nation's 100 most technologically significant new products or processes. Winning an R&D 100 award provides a mark of excellence known to industry, government, and academia as proof that the product is one of the most innovative ideas of the year.

Sandia won five awards in 2007 and 80 since first becoming involved in the competition in 1976.

For information on submitting your work for consideration, go to Sandia's internal R&D 100 awards site at www-irm.sandia.gov/org/smu/awards/criteria.htm. The reviewers will evaluate all one-page applications. Applicants will be notified in early January whether their submission will receive full corporate support for application preparation.

Draft entries, as detailed at the website above, are due by Nov. 15.

Deadlines:

- **Nov. 15:** Preliminary (one-page) submission to Sandia Technical Review Team

- **Jan. 1:** Committee approves eligible entries and assigns technical writer

- **March 1:** Final entries submitted to *R&D Magazine*

Retiree deaths

Note: Due to a combination of technical and logistics issues, the Lab News has not had access to the names of retirees who have passed away over the past several months. Sandia's HR group is now in a position to provide that information again. The Lab News will publish additional retiree death listings in the next issue and then will keep the list as current as possible.

Claire Haut (age 88)	March 14
Paul Spellman (74)	March 26
John Banister (84)	April 3
Charles Boal (85)	April 3
A. Darlene Kraft (87)	April 4
Leo Ortiz (84)	April 5
George Patton (63)	April 6
Norman Scott (84)	April 8
Gladio Baca (87)	April 11
Patrick Proulx (88)	April 19
Louis Gallegos (85)	April 20
Sylvia Sloan (84)	April 21
Glen Haines (85)	April 21
Robert Watson (50)	April 21
Robert Casper (85)	April 22
Clarence Walker (76)	April 23
Lillian Katzenstein (88)	April 25
Felton Bingham (71)	May 3
Jose Guitierrez (94)	May 4
Louis Wigley (76)	May 7
Richard Ballard (81)	May 11
Fleta Forsman (93)	May 15
Charles Kyger (80)	May 15
Floyd Albert Stake (85)	May 15
Willella Golden (85)	May 19
Emory Padgett (84)	May 19
George Hansche (93)	May 20
Levi Anaya (66)	May 21
David Romero (78)	May 21
James Krone (71)	May 23
J. Robert Windham (85)	May 26
Donald Jones (77)	May 27
Robert Sowell (79)	May 28
Robert Brooks (74)	May 29
Lloyd Faucett (76)	June 3
Joseph Maldonado (89)	June 3
Avenancio Lucero (82)	June 8
Robert John Burton (83)	June 11
Louis Roper (81)	June 18
Lucille Smith (83)	June 19
Lloyd Nelson (83)	June 19
Joe Hill (73)	June 19
A. Margaret Smith (87)	June 22
Clifford Selvage (84)	June 23
Mary James (79)	June 29
Ernest Bolton (87)	June 30
Ponciano Barela (85)	July 8
Roberta Cole (89)	July 8
Lawrence Guttke (69)	July 19
M. Leigh Hendricks (95)	July 24

Sandia LabNews

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<http://www.sandia.gov/LabNews>

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Employee flu shot clinics

Sandia's HBE organization has received its full shipment of influenza vaccine. There is no shortage of vaccine this year. The flu shots will be provided on first come, first served, while supplies last basis.

The following clinics are scheduled to administer flu shots to Sandia employees and Honeywell contractors:

- **Oct. 29, 30, and Nov. 1**

7:30 a.m. - 3:30 p.m.

HBE Health Services

Conference Rooms, Bldg. 831

Enter north doors and follow the yellow tape

- **Oct. 31**

7:30 a.m. - 3:30 p.m.

Sandia Synergy Center

1451 Innovation Parkway SE

Suite 200

The New Mexico Department of Health has not announced risk criteria this year, so the vaccine is being offered to all who wish to receive it.

Sandia/California

Sandia/California will be holding the initial flu shots clinic in conjunction with the Benefits Open Enrollment and Health Fair on Oct. 30, from 10 a.m. to 2 p.m. in the 905 (CRF) mezzanine.

Additional flu shots clinics are scheduled for Nov. 1 and 6, from 9 a.m. to 1 p.m. at the Life Design Center (LDC-MO32).

Sandian Juan Torres receives HENAAC's Pioneer Award

By Iris Aboytes

In ceremonies held Oct. 13 at the 19th Annual HENAAC (Hispanic Engineering National Achievement Awards Corporation) Conference in San Diego, Calif., Juan Torres (6332) received HENAAC's Pioneer Award. He was honored for his development of US critical infrastructure assurance roadmaps, helping establish the National SCADA Test Bed, and for leading a Bureau of Reclamation program to secure dams in the western US.

Looking for a better life, four-year-old Juan, his parents, and Juan's two-year-old brother emigrated to La Junta, Colo., in 1971, from Leon, a small city in central Mexico. But they found the streets of La Junta weren't paved in gold. His father, Juan Sr., had attended only first grade, his mother, Clementina, third. Jobs were hard to find, but slowly life improved for the family.

Mama Tina, his grandmother, believed that many of life's hardships could be overcome through education. "*Estudia y un dia te bendicira Dios y tus manos estaran llenas de dinero,*" she said.

(Go to school and someday God will bless you, and your hands will overflow with money.)

"My grandmother, who passed away at 94, could barely read and write," says Juan, "but what she lacked in formal education, she made up for with wisdom and experience."

Juan's parents knew that education was the key to their children's success. Clementina enrolled Juan in a Head Start program as soon as possible. Juan was fluent in English by the time he entered kindergarten. "Their love, work ethic, and constant emphasis on education contributed to our family's success," he says.

Juan's interest in science and math led him to the engineering technology program at DeVry Institute of Technology in Phoenix, then on to the University of Southern Colorado in Pueblo, Colo., and a bachelor's degree in electron-

ics engineering technology.

Just before graduation, his life took on new meaning and value as he received what he calls a "priceless privilege" — he became an American

citizen. His parents followed suit. This privilege opened doors to challenging career opportunities, beginning with a job offer from Sandia in 1990.

At Sandia Juan supported the design of mobile command and control systems for the Air Force. He also attended the University of New

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Mexico and earned a master of science degree in electrical engineering. As a member of the technical staff, Juan became the engineering liaison for a command and control system at Peterson Air Force Base in Colorado Springs, Colo.

He sat on the Leadership Advisory Group of the DHS Control System Security Center and has supported congressional testimony on supervisory control and data acquisition (SCADA) systems. He is currently manager of Energy Systems Analysis Dept. 6332.

Juan says his wife Michelle has been his support in career, education, and life decisions. "Michelle is devoted to our children, Andrew and Mikaela," says Juan. "She has made sacrifices so that we can prosper and grow as a family and as individuals."

"My hope is to continue to encourage others, especially Hispanic youth, to be open to the possibilities this world offers," says Juan.

"Mama Tina would have been proud," he says. "She was right when she said life's hardships could be overcome through education."



JUAN TORRES with (left to right) father Juan Sr., wife Michelle, son Andrew, daughter Mikaela, and mother Clementina at the HENAAC awards ceremonies.

HENAAC recognizes Monica Martinez-Canales as an outstanding role model

By Patti Koning

One definition of a luminary is "a person who has attained eminence in his or her field or is an inspiration to others." Another definition is Monica Martinez-Canales (8964), at least according to the Hispanic Engineers National Achievement Awards Corporation (HENAAC), which presented her with a 2007 Luminary Award on Oct. 12.

The Luminary Award is given to Hispanic professionals in engineering, science, and technology in recognition of significant contributions to the Hispanic technical community. HENAAC expects these individuals to continue to carry the torch at their respective organizations and inspire future generations to pursue careers in technology.

Monica, who was born in Mexico and raised in the toughest barrios of San Diego, was the first member of her extended family to go college. She earned her BS in mathematics from Stanford University and her PhD in numerical analysis from Rice University. She returned to Stanford as a postdoctoral fellow in the Department of Geological and Environmental Sciences. In 2000, she joined Sandia's Department of Computational Sciences and Mathematics Research.

Throughout college, Monica was considering a career in medicine. She majored in pure mathematics because she enjoyed the subject, but didn't see a career path outside of academia. Then, in 1991, she attended a conference orga-

nized by the Society for the Advancement of Chicanos and Native Americans in Science. She met Richard Tapia, a professor in the Department of Computational and Applied Mathematics at Rice University, and many of his current and former students, which included Mimi Celis, a female mathematician working at SGI, and Juan Meza, previously the manager of Sandia/California's Computational Sciences and Mathematics Research Department.

Monica says the interaction with Tapia and his students changed her life. "I met these amazing mathematicians who were impacting society at large with their work. I saw that you could apply mathematics to hard problems in national defense, high-performance computing, and visualization," she says.

She spent the summer of 1992 at Sandia/California as an intern, working under Meza. That fall, she attended Rice as a graduate student. For her PhD thesis, she researched fluid flow problems in an estuary base. She helped develop shallow water models of Galveston Bay that tracked the effects of tidal surges and ocean patterns.

"This was the most interesting work I'd done to that point," she says. "There was a real environmental interest driving the work, as both shipping tankers and fishermen have a large presence in Galveston Bay."

The underlying mathematics that Monica developed for the models got significant notice. She was awarded a National Science Foundation postdoctoral fellowship to work with the hydrogeology program at Stanford University.

In 2000, Juan Meza recruited Monica to work at Sandia in his department. From 2003 to 2005, she led her own LDRD project on an innovative new Bayesian-based approach to computational design exploration under uncertainty. In 2003 she was coprincipal investigator of a National



MONICA MARTINEZ-CANALES (8964) received a Luminary Award from the Hispanic Engineers National Achievement Awards Corporation (HENAAC) in recognition of her significant contributions to the Hispanic technical community. (Photo by Randy Wong)

Sandia CaliforniaNews

Science Foundation grant to fund student scholarships and a doctoral consortium for the 2003 Richard Tapia Celebration of Diversity in Computing Conference.

Monica is passionate about serving as a role model to encourage more women and Hispanics to pursue careers in math and science. She says the number of women and minorities among her peers is less than it should be.

To show the world what is possible, she is involved with numerous organizations for women and minorities in science.

Monica would like to be seen as proof that perseverance and hard work pay off. She understands that as a role model, she serves different purposes to different people. "Some just want to know it's achievable, others want help with a specific problem, others want long-term career advice, and others want to know how I got here and how I balance my work and family life," she says.

That work/family balance question is one Monica is highly qualified to answer — she's the mother of two young children. As active as her career is, she has an equally full life outside of work. In her "spare" time, she cooks, cleans, bakes, launders, irons, reads novels, sews children's clothes, makes quilts, grows plants from seed, paints, practices martial arts, and spends time tending her garden.

If she could impart just one lesson to aspiring mathematicians, scientists, or anyone for that matter, it would be that it is okay, even necessary, to ask questions.

"Between junior high school and college, I stopped asking questions," she says. "It made that part of my education excruciating. You have to learn to find people who will help you. The hardest part is approaching someone. Even now I find myself sitting in my office, not wanting to call someone because I don't even know what I don't understand. But if you don't ask, you can't learn."

Library

(Continued from page 1)

not everything it could be for today's researchers. In its current form, the tech library, says David, doesn't provide Sandia researchers with the most efficient tools to get their work done. The library, he says, has been overdue for a reinvention that takes advantage of today's information technology resources.

"Information, and access to information," says David, "is at the very heart of what we do [at Sandia]. We wouldn't do anything to jeopardize that."

The changes at the library have been under consideration for some time, David says, but the abrupt implementation was driven by immediate budget considerations.

Indirect costs escalating

Over the next few years, the Labs faces substantial increases in certain unavoidable indirect costs in health care, strategic investments, pensions, utilities, and others. If the Labs did nothing — that is, stayed with the status quo — indirect costs could increase about \$100 million by 2013. So reductions are being made in costs over which the

Technical library . . .

'Please give us your patience and your impatience; we need both.'

According to David Williams, director of Information Solutions and Services Center 9500, a number of rumors have incorrectly stated there will be no access to the book collection and classified documents at the technical library. He says the library information and holdings will be preserved. Classified information will be available through Recorded Information Management Dept. 9532 within a matter of days, he says, and access to books and other hard copy materials will be restored within weeks.

In comments at Tom Hunter's Oct. 23 all-hands meeting, David said: "As the director responsible for the library, I became concerned that we wouldn't have a library if we let it go much longer We were very labor intensive — we have a wonderful, dedicated library staff, but we weren't getting enough bang for the buck. We had to do better. You deserve better. . . ."

"These books belong to you. They don't belong to the library; the library is the custodian. The quarter-million classified documents we hold belong to you; they're essential to your work. We've got to ensure that they're here for you today, tomorrow, and into the future. . . ."

David said, "You will have a library and [as information technology investments are brought online] it will be a better library than we have today."

"Please give us your impatience *and* your patience; we need both."

Labs exercises some control.

Joe Polito, VP for Laboratory Transformation, has said that most of those reductions will be led by the Integrated Enabling Services SMU, which is reshaping the internal business model for delivering indirect services.

Some services currently provided by IES are being eliminated or reduced in scope — the Technical Library among them. All are implementing FY08 budgets that reflect substantial reductions from FY07 levels.

But as Anna Nusbaum (9535), manager of library records management, writes, "With sufficient funding to turn the library electronic, we are committed to make this effective for the research population, and, eventually, be perceived as an improvement and worth the pain of change" (see "We are not going to become information-impo- verished," on page 1).

Some postings to the internal blog seem to welcome a move by the library to more modern research tools. More than a few, however, caution that in the transition to a new library model, the Labs must take care not to discard valuable library services and not walk away from the bound volumes and hard copies of documents, and papers that contain much of Sandia's intellectual heritage.

Taking away his car?

As researcher Harry Hjalmarson (1435) told the *Lab News*, "Among other problems, the electronic library won't carry the old books and journals that haven't been scanned. There are many of them. Apparently scanning them is not a trivial task. And other libraries won't lend out-of-print books. And we can't do interlibrary loan if we don't have a library."

"They told me, 'Harry, we're going to take away your favorite restaurant.' I said it's more like you're taking away my car."

Meanwhile, other Sandians in management apparently have plans for a completely opposite result: not a closed-down library, but a new struc-

'Not information-impo- verished'

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vides, how the library is used and by whom, and similar areas. From the results of the study, it was clear that either we would have to invest substantial additional funds into conventional library services or make a basic change in our information delivery model. Because additional funds were not available, we began changing the model.

The study referenced above was based on an analysis of the actual use of the library. Combining that information with a realistic level of resources led us to the present course of action. Having a physical library is not one of Sandia's core goals. Making the necessary technical and other information available for accomplishing Sandia's mission is what matters, and we are committed to that.

It is important to understand that the fact of a change in the library model is not simply a consequence of budgetary concerns that have come up in the past few weeks and months. We would have made a change similar to this in any case. Recent budget concerns have, however, accelerated the implementation. We would have preferred a long phase-in period of perhaps a year. Instead, we have introduced the process on a schedule that makes the implementation more abrupt and seem more arbitrary than would have been ideal.

Regarding concern about the status of historical classified data [a concern that had been raised in other posts on the forum], classified (or other) materials will not be lost. Classified documents and others with limitations on access will be inaccessible for a time, until we develop a new procedure for making them available. The procedure for access will probably take more time than in the past because storage will be more remote. In case of an urgent national necessity, we will of course take whatever action is required to get needed historical or other information to the people who are dealing with that national urgency. For unclassified and otherwise unlimited electronic documents, of course, there will continue to be access through Web FileShare even during this transition period.

As a matter of perspective, it may be helpful to know that Sandia is not the only national laboratory that is taking serious steps toward this new kind of information delivery model. Several others are at some stage in the same process, though we may be a few months or years ahead of them. We are not going to become information-impo- verished. Maintaining excellent information access is a necessity for Sandia. We probably have not yet found the final way of doing this, and we will make changes as the need becomes apparent.

ture befitting the importance of books to a major national laboratory.

As plans for the library move forward, Wendy urges Sandians to continue to express their opinion at <https://sharepoint.sandia.gov/sites/Library-Discussions/Lists/Technical%20Library/Flat.aspx>.

There, she writes, "Input from the library user community on the [proposed] changes . . . is critical, particularly because the present plan calls for elimination of circulating books, printed journals, and document delivery as library services. We need comments right away because we have a brief time window for providing input to what services will be available near-term, and also for guiding the ultimate solution for library services."

The *Lab News* will run more articles as the situation becomes clearer.

All-hands meeting

(Continued from page 1)

number of people in FY08 that it did in FY07. That number will decline somewhat by FY11, Tom said, but many employees currently involved in nuclear weapons work will be redeployed to the Integrated Technologies and Systems Strategic Management Group.

The workforce restructuring plan, Tom said, represents Sandia's proactive effort to look at budget trends and program development realistically and to plan accordingly. As a result of that planning, Tom said, the Labs has not been caught off guard and suddenly faced with the prospect of laying off large numbers of people.

"We've been careful," Tom said. "We're going to deploy the [strategic] plan and we're going to stay with the plan" to reduce costs.

"We don't want to find ourselves in FY11 with a \$100 million pension bill and no way to pay it," he said in response to a question related to IES downsizing.

Tom said that because the Labs does not anticipate large-scale layoffs, it does not expect to invoke the congressionally mandated (so-called Section 3161) provisions for workforce downsizing.

Tom cautioned that there is a wild card in all of the Labs' plans. He noted that the Labs' weapons program is currently being funded under a congressional continuing resolution. When an actual FY08 nuclear weapons budget is approved by Congress and signed by the president, it could fall anywhere between the House-passed version of the budget, which could impact several

hundred employees, and the Senate version, which would have little or no immediate impact.

As IES reduces its FTE count by some 200 employees this year, Tom said, every effort will be made to minimize the impact on individuals. The first step in any process would be to use normal attrition and internal re-assignments. In those cases where workers cannot be placed in alternative positions, he said, the Labs will use its standard corporate realignment process. In some cases that

process could lead to separation from the Labs. He noted that Sandia does not anticipate offering any kind of special retirement or other separation incentives.

In his prepared remarks, Tom began by calling the just-completed fiscal year "tremendously successful; one of the most successful years [for accomplishment] in my recollection."

Among the highlights he cited: the dedication of MESA complex; the successful delivery of a new W76 AFF (arming, fuzing and firing) system and the B61 spin motor; the Z refurbishment; key support for DoD's missile defense program; MiniSAR; security systems for national security assets; the Joint BioEnergy Institute; the M&O contract extension; the Labs' five R&D 100 awards;

supercomputing accomplishments; the implementation of the Integrated Laboratory Management System; improvements in Labs safety; and record-setting participation in the charitable ECP program.

After his prepared remarks, Tom answered questions — with input from key senior management — about plans for the library (see related story on page 1), about workforce realignment processes and layoffs, about the Labs in a post-Pete Domenici era, and about the value of the national labs in general in a post-Cold War era.



ATTENDEES at the Oct. 23 all-hands meeting. (Photo by Randy Montoya)

Wicked problems

(Continued from page 1)

research team decided to pursue an electronic brainstorming experiment built around the common face-to-face technique used at Sandia where people submit ideas written on yellow sticky Post-It® notes.

As the team designed the experiment, the initial issue was coming up with a difficult question that had no right or wrong answer, Courtney says. In June Courtney, a psychologist who has worked at Sandia for two years, attended a new-hire breakfast hosted by Labs Director Tom Hunter. During the breakfast, Tom posed a challenge to the new hires, asking them to think about the implications of two popular models in management theory. In one view workers are just another natural resource to be used. In contrast, the second model sees employees as assets, which can be made more valuable by investing in their development. (See "Tom Hunter question posed to participants" below.)

Courtney shared the question with the team, and they unanimously decided to make it the wicked problem for the experiment.

Themes emerge from 'wicked problem' experiment

Group members and individuals working alone provided more than 200 concepts and ideas to answer Labs Director Tom Hunter's question dealing with two models in management theory. In one view workers are a natural resource and in the other they are assets. Each concept was explored and analyzed.

Among themes that emerged from the responses were:

- Most participants balked at being managed under a resource-driven model and preferred the asset-driven model.
- The participants noted the need to main-

tain and develop new skills, which conflicts with the constant pressure to secure funding and with being the low-cost provider in Work for Others projects.

- Good leaders and empowered employees ask great questions and approach problems with creativity, which builds on employee development. In this vein, one participant suggested the metaphor of "manager as a gardener," nurturing, developing, but also organizing and weeding.

- The need for risk tolerance and institutional courage was a recurring theme.

They recruited 120 Sandia employees and contractors and 26 student interns through *Sandia Daily News* and word of mouth to participate in the experiment, which lasted four days in August. The participants were broken into two groups, those who worked alone and did not see the ideas of the other participants and those who worked in a group and were able to see and build on the ideas of the other members in the group

via the Labs' intranet. Of the 120 employees and contractors, 69 contributed ideas.

During the experiment, participants logged onto the website anonymously and saw the question displayed at the top of the screen. They were asked to input their ideas — the more the better, but no name calling or abusive language.

The research was unusual because, while studies have been conducted with large brainstorming groups, most have been performed in academic settings with college students as participants. This experiment was, to the research

Tom Hunter question posed to participants

Participants in the four-day experiment that involved people working in a large group and sharing ideas online or as individuals to answer difficult questions were asked to respond to this challenge posed by Labs Director Tom Hunter.

Tom is interested in the contrast between two models of how organizations relate to their people. One model views people, metaphorically, as just another natural resource, and like other natural resources, to be used for the good of the organization. In that model obtaining people is largely a financial question and the company will derive whatever contributions it can from their skills or experience.

A second model asserts that people are an asset to be continually developed and the invest-

ment in their development will yield a dividend to the organization or even to the broader society.

By contrasting these two models, Tom is greatly interested in your thoughts and ideas about:

- How employees establish an identity for themselves in relation to their work environment, i.e., how they define their "we," and
- How to create the appropriate balance between the role of management and the sense of empowerment of employees.

He would like your comments and ideas about the above two questions, and also your insights into what environment best supports the identification and development of leaders.

"What we found was that people working as individuals were at least as effective and possibly more so than those brainstorming in a group over the web when trying to solve wicked, tangled problems, both in terms of quality and quantity."

George S. Davidson

team's knowledge, the first done in a laboratory/industrial setting over an extended period of time.

In addition, most previous studies looked only at quantity — number of responses — while only a small number examined the quality of the ideas. The Sandia experiment analyzed both. Responses to Tom's question were scored by team members according to originality, feasibility, and effectiveness. Responses were also analyzed by STANLEY, a Sandia-developed text analysis tool that looked at common noun phrases and key words.

"We were amazed at the length and quality of the responses, both from the people working as a group and those working individually," Courtney says. "People were very engaged, often writing long, detailed responses."

She adds that what was most interesting is that the quality of ideas from the people responding as individuals was "significantly better across all three quality ratings."

Courtney says the finding that individuals are more successful than groups in computer-mediated brainstorming suggests a time- and cost-saving potential for companies. Generally, when electronic group brainstorming is compared to verbal brainstorming, it is touted as having the advantages of shorter meetings, increased participation by remote team members, better documentation via electronic recording, and cash savings. But the Sandia research suggests that people working to solve problems on their own might involve less time and, thus less expense, than electronic group brainstorming.

While individuals working alone fared nominally better in this study, George says, the research also indicates that group on line brainstorming can be effective when ideas are needed from large numbers of people.

"I expect that in coming years better software, including threaded discussions with moderators to focus the work and prediction markets to evaluate quality, will become a tool that large organizations will use to solve wicked problems," he says.

Sandia/Lockheed Martin employees and retirees support Habitat house with cash donations and volunteer hours



SANDIA LABS DIRECTOR Tom Hunter and Pat Smith, acting VP of HR Div. 3000, join homeowners Victor and Isela Vasquez and their four children for the groundbreaking of Sandia's latest Habitat for Humanity house. The cost of this house was donated by Lockheed Martin, a group of Sandia retirees, and the Sandia Laboratory Federal Credit Union. To join the dedicated group of Sandia Serves volunteers who are helping to build the house, call Sam Bono in Community Involvement (3652) at 284-3226.

Labs' first female reactor operator Autumn Higgins

By Darrick Hurst

If Autumn Higgins (1381) could summarize her experience as a nuclear reactor operator in one word, that word would be "blessed."

"I look at myself and think, I'm one of those people who shouldn't have ended up where I am," Autumn says. "'Blessed' is an understatement in my view."

Distinguished as the first female nuclear reactor operator at Sandia, Autumn is one member of a team of reactor operators who run the Annular Core Research Reactor (ACRR) and formerly ran the Sandia Pulse Reactor (SPR) studying the effects of radiation on various materials.

"In simple terms, we perform tests on materials, components, and systems to study the effects of radiation," Autumn says.

Autumn's journey to becoming a nuclear reactor operator is one she describes as "sheer luck and hard work."

"I originally had no intention of becoming involved with this science or line of work," Autumn says. "Actually, I went to college as a French major, and then entered the United States Navy."

Prior to entering the military in 1995, Autumn was slated to begin training as an aircraft mechanic. When circumstances dictated that she extend her training longer than originally planned, she was asked to take an aptitude test to determine if she qualified for other jobs available in the Navy.

"I took what turned out to be about a 45-minute test, and when the scores came back, they told me I'd placed high enough in math and science that they suggested that I consider entering into the [Navy's] nuclear program," Autumn says. "This program had just opened up within the past year to women again, and I was thrilled about having the opportunity to be a part of it."

While in the Navy, Autumn operated nuclear reactors on the aircraft carrier USS *Harry S. Truman* (CVN-75).

"I really loved the range of experiences that came with that job," Autumn says.

After completing six years in the Navy, Autumn moved into the commercial sector as a nonlicensed nuclear operator for Surry Power in southeastern Virginia. After nearly two years there, she met her husband at a local rodeo, and moved to New Mexico to be closer to his family.

"Being that a nuclear reactor operator is a specialized field of work, and I wanted to continue working in that area," Autumn says. "I took a position at Los Alamos National Laboratory in the operations center at Tech Area 55, before eventually coming to Sandia to work as a reactor operator."

"I love operating reactors," she says. "I've operated them for propulsion, power, and most recently here at Sandia, for research. I hope the world can come to know and appreciate what the possibilities are from a nuclear sense — no one should fear the possibilities."

Autumn's coworkers describe working with her as an easy and professional experience.

"Autumn has been a good addition to our staff," says fellow SPR operator,



AUTUMN HIGGINS

Photo by Randy Montoya

Sid Domingues (1381). "She's an eager participant in the daily operation of the facility, and although she was only involved with operations for the short time that we operated prior to the shutdown of the reactor, she has always been very willing to learn, making her an effective member of our team from the beginning."

"Autumn is a joy to work with," says Matt Burger (1381), engineer at the SPR. "She brings enthusiasm and energy to the work she does. She was invaluable to the work that we completed. She worked with experimenters and operated SPR under supervision while in training as a member of the SPR staff that completed about 600 reactor operations in a single, very busy year."

Autumn says she hopes her story inspires others to reach beyond their circumstances.

"Whenever life presents you with an opportunity to pursue something outside what you may have been looking for," Autumn says, "think about seizing that opportunity because you never know what life may have in store for you."

Following the recent shutdown of the SPR, Autumn will be continuing work in critical testing full time at the ACRR.

Sandia's recordable accident rate down 37 percent in 2007

By Chris Burroughs

Sandia's recordable accident rate was down 37 percent in 2007. The reasons for the reduction, says Phil Newman, director of ES&H and Emergency Management Center 4100, include management engagement, better employee awareness, the behavior-based safety process, and improved communications.

Recordable accidents are those that require more than simple first aid treatment.

"Our target is zero accidents," he says. "It is unacceptable for Sandia workers to be hurt. All accidents are preventable. People are our most important asset, and we want to protect them. Still, I consider a 37 percent decrease good news that indicates we are headed in the right direction."

Exceeds goal set in Performance Evaluation Plan

The 37 percent decrease equates to Sandia ending the year at 1.8 accidents per 200,000 work hours, exceeding a goal of less than or equal to 1.9. The 200,000 work hours represents 100 full time people working 40 hours a week 50 weeks a year. The 1.9 target was set in the Performance Evaluation Plan (PEP), Sandia's annual agreement with the NNSA Sandia Site Office.

More good news, Phil says, is that the Days Away, Restricted, or Transferred Rate Case Rate (DART CR) was down 35 percent from 2006. DART CR is a measure of the severity of the accidents that occur. Sandia ended the year at a DART CR of 0.8 vs. the PEP goal of less than 0.9.

Phil says there were also "tremendous" improvements in the environmental area. In 2004 Sandia had 27 regulatory violations with proposed fines of \$3.2 million that ultimately were reduced to \$620,000. During 2005-2006, there were seven violations with proposed fines of \$261,000 that were subsequently reduced to \$169,000. In 2007 there were two violations with proposed fines of \$4,500. The 2007 violations were administrative in nature and did not result in any harm to the environment.

"While we are headed in the right direction, violations are never acceptable, and our goal for 2008 is to have no violations and no fines," Phil says.



40 years ago . . . A new engineering concept so basic that it has potential application in hundreds of devices ranging from household appliances to inertial switches for spacecraft has been developed by Donald Wilkes of Advanced Development Division 1322. Named rolamite, the principle involves a controlled interaction of two or more rollers with a flexible band or tape (usually metallic). It appears to be an elementary mechanism probably as basic as the lever, wheel, crank, spring or hinge. A search of technical literature indicates that a mechanical element of such a basic nature has not been invented in this century.

Already the basis of a complete new technology within Sandia, the rolamite concept may be used to produce a variety of nearly frictionless devices which in most cases require no lubrication.

30 years ago . . . Space shuttle work about complete — Since February 1974 Sandia has served as consultant to NASA for the space shuttle solid rocket booster recovery program. Two tests of the system were conducted successfully recently at the National Parachute Range, El Centro, California. A cluster of three main parachutes (each 115 ft. in diameter) gently lowered the 48,000-lb. test vehicle to earth from an altitude of 18,000 feet. This is the heaviest weight that could be dropped to simulate the 170,000-lb. solid booster rocket which the parachute system will ultimately handle.



30 YEARS AGO . . . a 75-ton spent nuclear fuel cask carried on a 75-ton railcar runs into a concrete wall at 80 mph. The test simulated a "very severe transportation accident." The cask survived.

Four Sandians honored by AAAS

Four Sandians will receive the title of Fellow of the American Association for the Advancement of Science during the annual AAAS meeting in February, to be held in Boston. The award is for efforts toward advancing science applications that are deemed scientifically or socially distinguished.

The awardees are:

- **Julia Hsu** (1133), for significant research on the structure and properties of electronic materials and for leadership in the materials physics community.

- **Gretchen Jordan** (1012), for measuring performance and diversity within organizational structures and developing innovative methods for assessing the effectiveness of research programs.

- **Wilhelm Gauster** (ret.), for outstanding contributions and leadership in the advancement of fusion energy science and technology and defense sciences.

- **Nigel Hey** (ret.), for meritorious service in the communication of science through four decades of sustained accomplishment in public affairs, science writing, editing, and publishing.

Each will be presented with an official certificate and a pin, continuing a tradition that began with the first fellows nominated in 1874.

AAAS is the world's largest general scientific society. Its publication, *Science*, has an audience of more than one million readers.

— Neal Singer



JULIA HSU



GRETCHEN JORDAN



WILHELM GAUSTER



NIGEL HEY

The heartbeat of a mother initiates change for newborn baby screening

Law passed by legislature makes additional screening for newborn babies a requirement

By Iris Aboytes

Storm and Tiger were born three years apart to Kileen Hall (4221). Both babies seemed healthy, yet each baby boy lived only 28 hours.

No problem indicators were identified for Storm, the older baby. "His cause of death was misdiagnosed as coarctation of the aorta," says Kileen. While pregnant with Tiger, Kileen had an ultrasound test that indicated he had a healthy heart. Everything appeared normal. "His heart was examined by a pediatric cardiologist after he was born, and again everything was normal" says Kileen. Yet, Tiger never went home. His cause of death was listed as "unknown."

"I spent hours on the web looking in medical journals for similar signs and symptoms," says Kileen. "A week after Tiger's death, I found the Save Babies Through Screening website and information on a disorder called Very Long Chain Acyl-CoA Dehydrogenase Deficiency (VLCAD). Its symptoms were similar to Storm's and Tiger's. We decided to have Tiger's blood analysis done. It came back as VLCAD." Kileen then sent Storm's postmortem blood spot for analysis. The test confirmed what she already knew; he too had died from VLCAD.

The heel stick that every newborn receives at birth is to test for the first discovered metabolic

disorder, phenylketonuria, or as it is more commonly known, PKU. "Now new technology has made it possible for VLCAD and 50-plus other metabolic disorders to be screened with the same heel stick," says Kileen. "Although there is no cure for metabolic disorders, most can be managed simply by diet if detected early."

State Sen. Steven Komadina had been Kileen's obstetrician. Being very familiar with both Tiger's and Storm's cases, he introduced legislation for expanded newborn screening in New Mexico. But it took eight years. It wasn't until



state Sen. Rhonda King, pregnant at the time, reintroduced the bill that it was finally approved in 2005. Implementation was scheduled for April 2006, but logistics took longer.

So starting in January 2008 every baby born in New Mexico will be screened for all 50-plus disorders. "What a huge accomplishment for Save Babies and United Way," says Kileen. "Less than 20 states routinely screen for these disorders. Too bad it took eight years."

"Through the Save Babies Through Screening foundation and United Way, we have had the funding to educate both New Mexico parents and physicians about these disorders and the ability to screen for them," she says. "We have made informational videos and sent them to pediatric hospitals around the state."

"I have two healthy teenage daughters," says Kileen. "As campaign director for Save Babies, I introduce my precious boys. It is my hope and desire that the memory of their short lives will raise awareness of these disorders and save others from the same heartache. I volunteer my time as campaign director and have been 'newborn screaming' [what Kileen calls her perseverance] for the last eight years."

For more information on Save Babies Through Screening go to www.savebabies.org or call Kileen Hall at 454-3383.

Twelfth annual Student Symposium

By Darrick Hurst

Interns from all walks of Sandia work converged on the Albuquerque Embassy Suites hotel at the end of the summer intern season to take part in the 12th annual Student Internship Symposium in August.



NATASHA MOONKA talks to retired Sandia VP Pace VanDevender during the 12th annual Student Intern Symposium. (Photo by Bill Doty)

Representing a cornucopia of student research projects and a chance to have a bit of fun, the symposium is the culminating event of the Sandia Student Internship Program, promoting professional career development in research, engineering, and in support positions. The annual gathering is a way of bringing together interns, staff members, mentors, management, and representatives from industry and academia to share and learn about the variety of research that is conducted in the various internships.

Nearly 550 individuals attended this year's event, 280 of whom were student interns. Symposium attendees had an opportunity to view and to participate in workshops and student oral and poster presentations. Other activities during the event included a luncheon where Labs Director

Tom Hunter addressed the audience. In addition, 18 exhibitors were on hand sharing information about graduate school programs, funding options, and career opportunities.

Interns become active members in their sponsoring departments and support current research activities and projects at Sandia. In addition to gaining practical work experience, students participate in myriad professional development activities throughout their summers working at the Labs.



JASON FRYE explains some of the finer points of his presentation during the Student Intern Symposium. (Photo by Bill Doty)

Feedback

Q: Is there any plan or timeline for the offering of a Roth 401k plan? Getting the taxes out of the way on my 401k savings would be extremely valuable to certainly many others and me.

A: Sandia's executive management is currently evaluating (9/07) the issue of adding a Roth 401(k) account to Sandia's savings plans. The review process can take some time, since benefit change proposals must be reviewed and endorsed by Sandia's executive management and Lockheed Martin before being presented to Sandia's Board of Directors and DOE for final approval.

— Mark Biggs (10510)

Q: Are there limitation on creating an external personal websites (such as blogs)? There are obvious things that should stay at work, but are there any general guidelines?

A: Sandia CPR 200.1.1 "Media Relations" does not address blogs specifically; however, it would be prudent for you to review section 2.3 "Personal Views." Perhaps of greater importance, and applicable to Sandia employees, is the Lockheed Martin Corporate Policy Statement CPS-201 "Release of Information." Its "Personal Statements" section, which served as a model for the similar Sandia CPR passage, does address blogs. For your convenience, here is that section:

"Any employee may express individual beliefs or convictions with respect to legislation, government action, public officials, candidates, and other public interest issues. The employee should clearly state, however, that such expressions represent a personal view. These expressions must not by inference, design or use of company time, stationery, facilities, title, or other means convey, indicate, or imply that such an opinion is or is not the view of Lockheed Martin management, or that the employee is acting as a spokesperson for or on behalf of Lockheed Martin or its entities. This applies in all cases, including but not limited to interviews with news media, and personal websites, blogs (web logs), Internet chat rooms, and bulletin boards, whether accessed using personal computing and information resources, or Lockheed Martin's computing and information resources (see CPS-037, Computing and Information Resources)."

You can access this material yourself by going to <https://rproxy.sandia.gov/www-irn/policy/brules/direct.html>. — Rod Geer, Public Relations & Communication Center (03600)