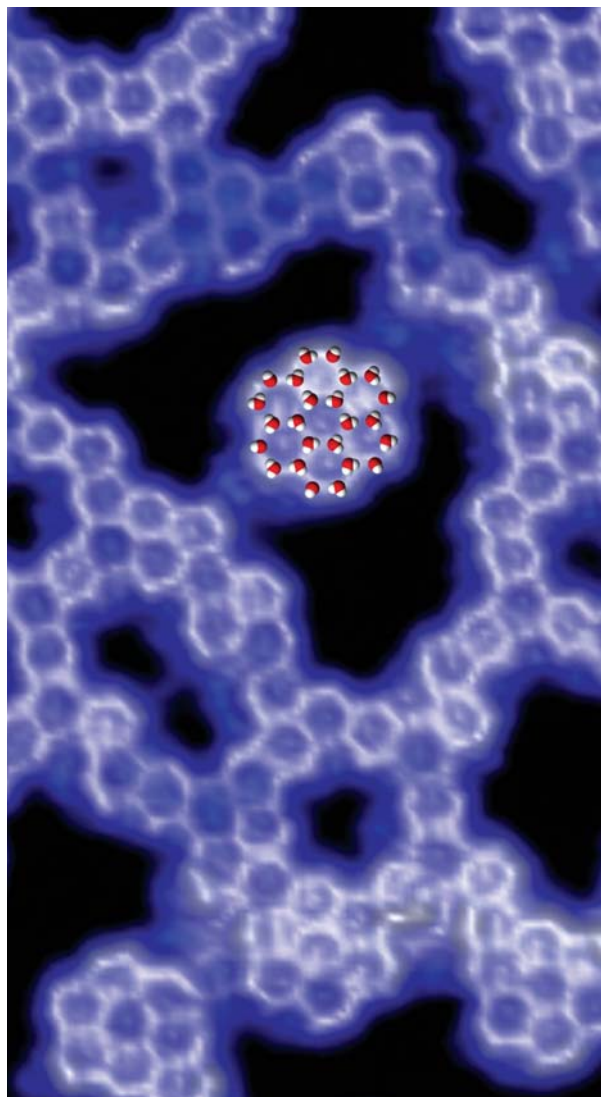


Understanding the secrets of water on a surface

In *Physics Today* cover story, Peter Feibelman traces progression of an idea



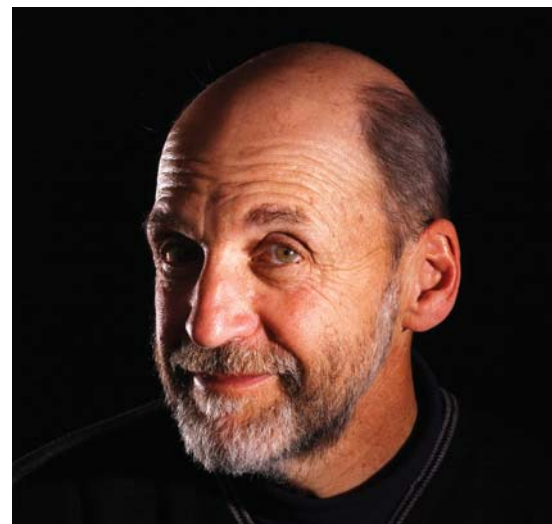
By Neal Singer

It may seem a harmless question to ask how molecules of water arrange themselves to cover a surface, but the answer has big consequences. The drag experienced by water flowing past a surface affects the transport of pollutants in the environment. The initial growth of ice crystals on dust is essential to the formation of raindrops.

In 2001, senior scientist Peter Feibelman (1130) proposed an unexpected solution to a long-standing experimental mystery concerning a one-molecule-thick layer of water on ruthenium: By giving up a hydrogen atom, half the layer's water molecules find themselves more attracted to the surface. They therefore move closer to it, just as was seen, but not understood, in a 1994 diffraction experiment.

Peter's technical paper on this work, published in *Science* (see *Lab News*, Jan. 25, 2002) has subsequently been referenced more than 200 times — an average, Peter points out with justified pride, of once every two weeks.

(Continued on page 4)



PETER FEIBELMAN

Photo by Randy Montoya

THE FEBRUARY ISSUE of *Physics Today* used this cover image to illustrate work of Peter Feibelman featured in the publication. This scanning tunneling microscope image of water on palladium reveals hexagonal rings of water molecules self-assembled into narrow chains and clusters, as depicted in the superimposed illustration. The arrangement belies the long-held idea of the first water layer as a two-dimensionally continuous molecular mesh, similar to a single "puckered hexagonal" layer of a naturally occurring ice crystal.

(Image courtesy of Miquel Salmeron, director of the Materials Sciences Division, Lawrence Berkeley National Laboratory)

Sandia LabNews

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Feb. 14-20 marks National Engineers Week 2010. This year the *Lab News* takes note of the week with a personal essay by Robin Jones (4826), president of the New Mexico chapter of the National Society of Professional Engineers. In her reflections on being an engineer, Robin reminds us of the official engineers' creed, adopted by the national society in 1954: "As a professional engineer, I dedicate my professional knowledge and skill to the advancement and betterment of human welfare." Read Robin's story on page 9.

Survey says . . .

Latest survey results suggest most readers find value in *Lab News*, *Daily News*

Most Sandians are likely to agree that during the past four years their jobs have become more complex or stressful and their workdays busier. Yet these same Sandians say they still pay lots of attention to the *Sandia Lab News* and *Sandia Daily News* and seem to rely on them — and trust them — for important information and news.

At least that's the consensus of the 738 employees who recently completed a readership survey about the two publications. The last time the survey was conducted, in October 2006, 507 Sandians participated. The increase this time around is the result of opening up the process to all employees. In previous surveys, a randomly selected subset of the population was chosen to participate.

The survey, the first since late 2006, also indicates that employees are

(Continued on page 6)

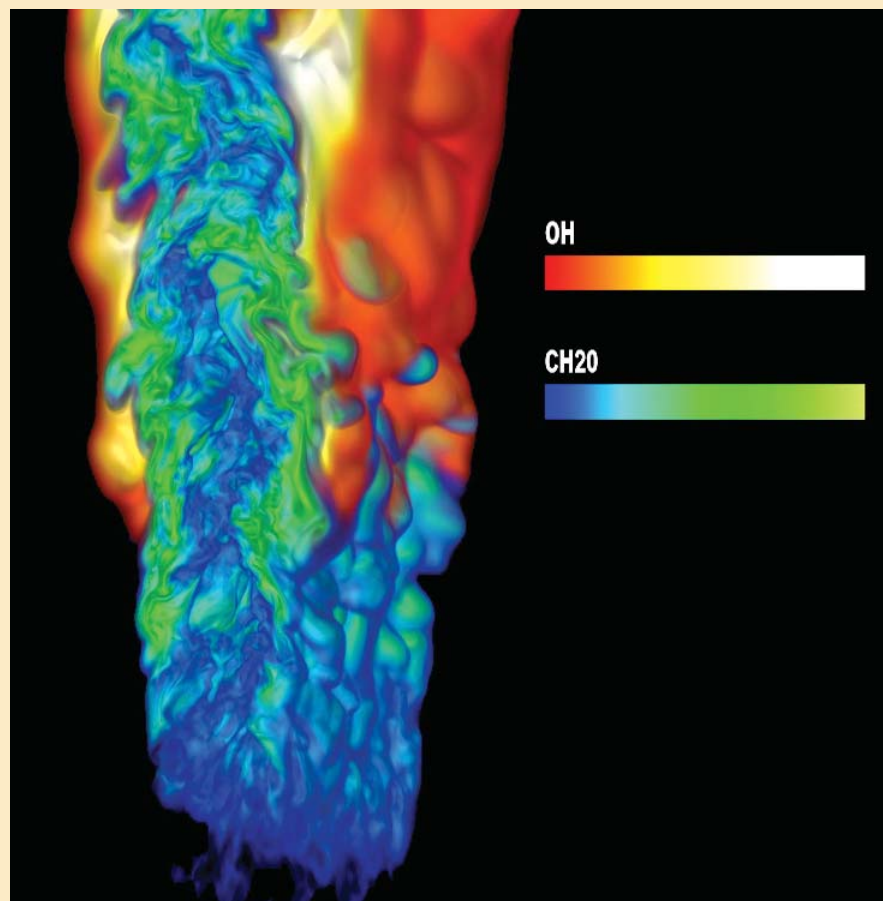


Each year, the US observes Black History Month in February. This year to mark the occasion Sandia's Black Leadership Committee is cosponsoring a screening of *Inside Buffalo*, a documentary that tells the story of African American soldiers in World War II. For details, see the story on page 12.

Also inside . . .

- California site takes innovative approach to saving water 3
- Sandia by the numbers: People, budgets, assets 7
- Jim Novak named to Anderson Schools Hall of Fame 8
- TVC's Center for Commercialization and Entrepreneurial Training 8
- Qatari delegation visits Labs to explore opportunities for collaboration 8

DOE's INCITE program fosters advanced supercomputing research



Several Sandia researchers have been awarded a total of 73 million supercomputer processing hours under DOE's INCITE program to advance research in climate change, alternative energies, life sciences, and materials science. The simulation shown here, using an INCITE allocation from 2009, depicts turbulently lifted ethylene-air jet flame. It was performed at the National Center for Computational Sciences/Oak Ridge National Laboratory on more than 30,000 CrayXT5 processors. The flame is denoted by hydroxyl radical (OH) shown in reddish colors. The autoignition upstream of the lifted flame is denoted by formaldehyde (CH_2O) shown in bluish-green colors. Formaldehyde also appears on the fuel-rich side of the flame. The volume rendering was performed by Hongfeng Yu and Jackie Chen (8351). The simulation was performed by Chun Sang Yoo and Jackie. Jackie and colleague Joseph Oefelein (8351), Ron Oldfield (1422), and Ron Minnich (8961) are leading teams that have received 2010 INCITE awards. Mark Taylor (1433) is a coinvestigator on a Los Alamos-led study. For more about the INCITE awards, see story on page 4.

That's that

Have you ever labored under a misapprehension? I can tell you from bitter experience that it's the very hardest sort of labor there is.

Over the years (in my pre-Sandia life), I've labored under lots of things: a shovel, a welder's mask, a carpenter's belt, a push broom, even (yes) a manual typewriter! Some of those labors were tougher than others, but none comes close to laboring under a misapprehension. Maybe my latest misapprehension is one you share. If so, consider this an object lesson for you.

Here's the story: I've worked for years with the certain knowledge that if you use a PC at Sandia, it's backed up automatically every night. By "corporate." Just sort of happens transparently and without any intervention required. To paraphrase Ronald Reagan, it's not that I was ignorant, it's that what I "knew" just wasn't so. A pretty consequential misapprehension.

Last week, my computer hard drive crashed and burned. I mean, it died. I could hear its death throes and it wasn't pretty. (Remember the sounds of the Titanic going down in James Cameron's previously biggest movie of all time? My drive sounded like that. So did I.)

I thought, okay, I've lost the hard drive, but surely all my stuff can be restored to a new system. Uh-uh. I lost virtually everything I've worked on for the past decade and more. When I get my new PC up and running (hopefully by the time you read this, I'll be back in business), my CSU rep, Jeff (who has been extremely helpful and attentive), says we may be able to find a few bits and pieces of data from my old drive lurking on corporate servers. But maybe not.

Here's some advice I got — too late — that I'll pass along here: Call the Corporate Computing Help Desk. Tell whoever answers that you want to explore the options available to you for backing up your data. You'll probably end up working with a CSU, who'll get you set up. I encourage you to call. You don't want to go through what I've been through. It's like losing your credit cards: Life goes on and things get sorted out eventually, but it's a real nuisance in the short term and one you can avoid with a simple call.

* * *

Might take a plane, might take a train, but if I have t' walk I'm gonna get there just the same. Only, strike the "train" part from that. Did that a couple of weeks back, took the train to Los Angeles. Thought it would be fun. Different. It was certainly different. Almost eight hours late getting home (only two-some hours late getting there).

As we sat on a siding in Barstow waiting for a new piece of equipment, I was reduced to reading a promotional brochure from Amtrak. It was about the rail line's frequent rider program. As I thought about that, I came up with an idea, one that would apply equally to both Amtrak and to airlines. The frequent rider/flyer program ought to be based not on how many miles you travel but on how many hours you spend in one of their seats. I'll bet if the rewards programs worked that way, there'd be a lot more on-time flights and trains.

* * *

And finally, a small housekeeping note. Beginning on page 1 in this issue, we have a story about the results of our latest *Lab News/Sandia Daily News/Lab News Interactive* readership survey. I thank all of you who participated, especially you retirees (whom, I'm happy to say, we involved in the survey this year for the very first time). This is a process we go through every couple of years and we always try to take the results to heart. We'll study what folks have to say and try to use them to make our publications better and more relevant for everyone.

Before I go I have to take note of a specific comment in the survey: A participant wrote that he only reads this column because "it's one of those things you love to hate." I'm surprised I've stirred emotions that deeply (a strong dislike I could understand, but *hatred?*). Whatever the motivation, though, thanks for reading.

See you next time.

— Bill Murphy, (505-845-0845, MS0165, wtmurph@sandia.gov)

Paul Dodd tapped as Fellow of IEEE for advancing understanding of 'single-event' effects

Paul Dodd (1731-1) has been selected a Fellow of the Institute of Electrical & Electronics Engineers, Inc. (IEEE) "for contributions to the understanding and simulation of single-event effects in microelectronics," according to a notification sent out by the organization.

Single-event effects in microelectronics are caused when energetic particles in a radiation environment (typically protons, neutrons, or heavy ions) strike a sensitive region of a microelectronic device or integrated circuit. The particle strike may cause no observable effect, a temporary malfunction, or even permanent damage.

The IEEE grade of Fellow — one of the institute's most prestigious awards — is conferred by the board of directors upon a person with an extraordinary record of accomplishments in any of the IEEE fields of interest. The total number selected in any one year does not exceed one-tenth of one percent of IEEE's total voting Institute membership.

Paul, a principal member of the technical staff, serves as team leader for Radiation Physics, Technology, and Assurance at Sandia. He received his BS, MS, and PhD degrees in electrical engineering from Purdue University in 1988, 1989, and 1993, respectively, and joined Sandia following the completion of his graduate studies.

During the past 16 years, he has been involved in the development of Sandia's radiation-hardened bulk and silicon-on-insulator CMOS technologies, the investigation of physical mechanisms responsible for device radiation response, and the computer simulation of radiation effects on microelectronics. During this time he has also performed extensive radiation hardness assurance testing of a variety of microelectronics devices and integrated circuits, with an emphasis on the testing and analysis of single-event effects.

His work has led to an improved understanding of physical mechanisms for single-event effects and has been critical to the success of several space and military systems that must operate reliably in radiation environments.

Paul is active in the radiation effects and microelectronics research communities. He served on committees for the IEEE Nuclear and Space Radiation Effects Conference (NSREC), the IEEE International Electron Devices Meeting, and the IEEE International Reliability Physics Symposium (IRPS). Paul has been general chairman, technical program chairman, short course chairman, awards chairman, and publicity chairman for the IEEE NSREC. He has presented numerous short courses at the NSREC, the IRPS, the IEEE Silicon-on-Insulator Conference, the Hardened Electronics and Radiation Technology Conference, and the European RADECS conference.

Paul has authored or coauthored more than 100 publications, including papers that have won nine Outstanding Conference Paper awards at the IEEE NSREC. In 2001, Paul received the IEEE NPSS Early Achievement Award and was named Outstanding Young Engineer by the IEEE's Albuquerque Section. — Neal Singer



PAUL DODD

Sandia LabNews

Sandia National Laboratories

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Retiree deaths

F.A. Leckman (age 92)	Nov. 27
Glenn W. Guist (88)	Dec. 7
William L. Albert (85)	Dec. 9
Roy J. Martin (91)	Dec. 11
George T. Kupper (73)	Dec. 11
James Wilbur Sims (85)	Dec. 11
Adolfo Martinez (85)	Dec. 11
Horace J. Montoya (86)	Dec. 12
Warren Floyd Windle (72)	Dec. 17
Alphonse Ronald Iacchetti (76)	Dec. 18
M. Robert Kestenbaum (76)	Dec. 22
Luke J. Vortman (89)	Dec. 24
George W. Arnold (86)	Dec. 25
Theodore H. Reed (86)	Dec. 26
Elliot S. Airmet (94)	Dec. 28
Robert H. Austin (79)	Dec. 30
Marvin E. Barnett (80)	Jan. 8
Harry P. Farmer (83)	Jan. 8
Francis E. Thompson (88)	Jan. 15
Reuben J. Montoya (91)	Jan. 17
Harold Otto Jeske (88)	Jan. 17
Stephen J. Vasey (64)	Jan. 19
Arthur Castillo (91)	Jan. 20

What, no flush?

New waterfree urinals are clean, maintenance-free, and drastically reduce water consumption

By Patti Koning

In buildings 963, 929, and 911 in California, men may have noticed something missing from the urinals — water. Starting about nine months ago, Maintenance Engineering Manager Bob Clevenger (8513) began installing Falcon Waterfree urinals in a few select restrooms around the site.

"I'm from New Mexico, so water conservation has always been important to me," he says. "While traveling in the Southwest, I noticed waterfree urinals. I did some research and found that in addition to the water savings, they are very cost-effective. It seemed like an obvious choice for Sandia."

Each Falcon Waterfree urinal saves up to 40,000 gallons of fresh water per year and avoids an equivalent amount of fresh water treatments. Waterfree urinals have no flush valves, sensors, or mechanical parts, so there is no mechanical maintenance.

Maintenance Engineering (8513) staff first installed the waterfree urinals in their own buildings because Bob figured that his own staff would give him the most honest feedback.

"I think it's an outstanding concept," says Gene Amezcua (8513), the janitorial supervisor. "We've been wasting water for so long, it's about time we started saving water instead. These new urinals really move us in the right direction in terms of water savings and LEED certification."

Currently, there are more than 150,000 Falcon Waterfree urinals in use around the world at places like Staples Center, Hollywood Bowl, Rose Bowl, and Dodger Stadium in Los Angeles; the Beijing International Airport; Bank of America tower in New York City; World of Coke in Atlanta; Dolphin Stadium in Florida; and the Taj Mahal in India.

Waterfree urinals are specified as a potential technology to earn United States Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) points. Many government agencies, such as the Environmental Protection Agency, NASA, National Park Service, and Department of Health and Human Services, now require significant new building projects to be LEED-certified. Starting this year, waterfree urinals are a US Army standard.

Where's the flush?

There are a few social barriers to overcome with waterless urinals — namely, the lack of water. A common perception is that the water in a urinal or toilet keeps it clean. After using the restroom, the flush provides a satisfying rush of seemingly clean water.

"The first time I saw the waterfree urinals, I thought it was not working because there was no water," says California site public relations officer Mike Janes (8529). "It took a little getting used to."

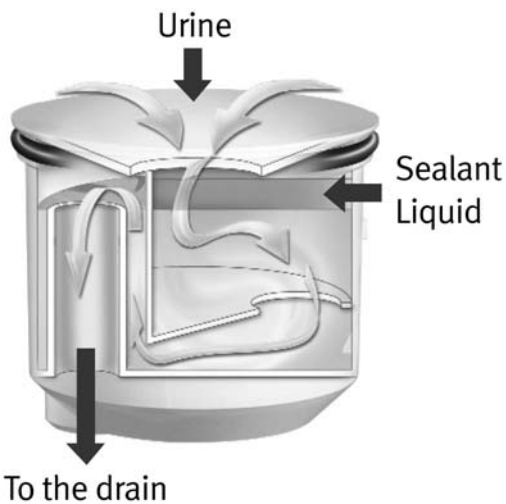
Amezcua thinks the biggest obstacle is overcoming the flush habit. "It is something guys will have to get used to," he says. "You are asking them to break a habit they've probably had their entire life."

In fact, the constant moisture in traditional urinals encourages the growth and survival of bacteria. Charles Gerba, a professor of environmental microbiology at the University of Arizona, describes flush-type urinals as a reservoir for disease-causing bacteria.

The picture becomes more frightening when you consider the aerosol created when a traditional urinal is flushed. "All one has to do is stand in front of a urinal and flush it to feel the mist of the droplets being thrown out of the urinal," wrote Gerba in a letter defending the cleanliness of waterfree urinals. "Flushing appears to be the single mechanism by which disease-causing bacteria and virus contamination of surfaces in public restrooms occurs."

With no flush to help it along, urine flows through a replaceable funnel-shaped cartridge at the bottom of

the urinal. The urine continues through a layer of sealant liquid, ending up in the drain, the same final destination as with flush-type urinals. The sealant, which Falcon describes on its website as "pleasant smelling," provides an airtight barrier that traps odors. Urine sediment is collected by the cartridge, which is replaced about three to four times a year.



SCHEMATIC of how the Falcon Waterfree cartridge works.

"They are almost maintenance free," says plumber John Rocha (8513-1). "We don't have to worry about water leaks. Besides changing the cartridge, there is not much else to do except normal cleaning."

Based on conversations with plumbers and custodians, Bob estimates the 12 waterfree urinals will save the site about 180 man-hours in 2010, or approximately \$18,000. In terms of water consumption, the waterfree urinals will result in a savings of approximately half a million gallons of water in 2010. If waterfree urinals were installed site-wide, the water savings would be upwards of 5 million gallons.

Amezcua says that for the janitorial staff, the waterfree urinals present a minimal change. If anything, the new urinals make their efforts more efficient.

Coming to a restroom near you

After the pilot project in Bldg. 963 proved successful, Maintenance Engineering staff installed waterfree urinals in Bldg. 929, in part to help the effort to get LEED certification for that building. Bldg. 911 got waterfree urinals at the start of this year. Bob says his goal is to convert all of the flush-type urinals to waterfree, but admits that progress will likely be slow.

"There is a barrier to replacing perfectly good equipment," he says. "We are moving slowly to ensure that the urinals gain acceptance. The water savings will be zero if people don't use them."

So far, the feedback has been very positive. Many men have had an experience like Mike's — it seems strange at first, but upon learning of the conservation and cleanliness features of the waterfree urinals, they're sold.

"I looked up the company website just because I was curious," says Mike. "I was sold on the water savings

alone. But now the idea of flushing seems, well, let's just say I'd avoid it given the choice."

Bob says there have been a few instances of complaints about strange odors that were blamed on the waterfree urinals. Each time, the culprit was traced to a different source. Here's another fact you may never have wanted to consider — urine essentially has no odor. The odor we associate with urine comes when it reacts with water to create ammonia gas.

Gary Shamber (8516), manager of the California site's Environmental Management department, says waterfree urinals could play an important role in meeting water reduction targets. "Considering the number of restrooms we have on site, waterfree urinals could have a significant impact, maybe reducing our overall fresh water consumption by 10-15 percent, if they were installed site-wide," he says.

In an executive order signed last October, President Obama set sustainability goals for federal agencies to improve their environmental, energy, and economic performance. To meet the goals, Sandia Corp. must improve water efficiency 26 percent by 2020, based on a fiscal year 2007 baseline.

The California site is well on its way to meeting that



BOB CLEVENGER in a Sandia restroom with the new urinals coming on Monday.

26 percent reduction, thanks to a "smart" water system for landscaping that allows greater control over when sprinklers are used, and even monitors the moisture level on the ground. This system resulted in a 15 percent decrease in water usage from 2007 to 2009 at the California site. Gary says that site operations is looking at changing some of the landscaping on site to "xeriscape", using rocks or native plants that would not require watering.

"Landscaping and waterfree urinals are obvious places to make a big impact on water usage," he adds. "Once we've exhausted those, we'll have to work harder for new places to improve efficiency."

For more information on Falcon Waterfree urinals, see www.falconwaterfree.com.

Sandia California News

Sandia signs agreement with New Zealand institute to address critical transportation energy issues

By Mike Janes

Sandia and Scion, a New Zealand Crown Research Institute, have signed an agreement that will focus research on the cooperative development of technical information and system studies relevant to low-carbon energy technologies. The memorandum of understanding (MOU) outlines the intention to develop mutually beneficial research activities between Sandia and Scion.

Transportation Energy Center 8300 Director Bob Carling says the collaboration will explore key research topics important to both organizations, including bio-fuels supply chain analysis, renewable energy and alternative transportation fuels, and modeling and systems analysis of energy resources.

The effort, Bob says, is aimed at leveraging complementary capabilities at each institution and furthering

the strategic objectives in these areas for each party. It also signifies the first official MOU to be signed in support of Sandia's blossoming HITEC (Hub for Innovation in the Transportation Energy Community) effort. (The HITEC website is at www.hitectransportation.org.)

SCION 
Next generation biomaterials

Scion CEO Tom Richardson says there is much to be gained from US-New Zealand scientific collaboration in this field as both countries see potential in creating new energy products from renewable resources.

"Scion has undertaken many decades of research into creating energy from woody residues," Richardson says. "We are therefore in a strong position to both contribute to and benefit from the large research investment that the US is making in this area. We welcome the opportunity to work with organizations like Sandia that have a shared interest in creating low carbon energy options for our respective consumers."

Water

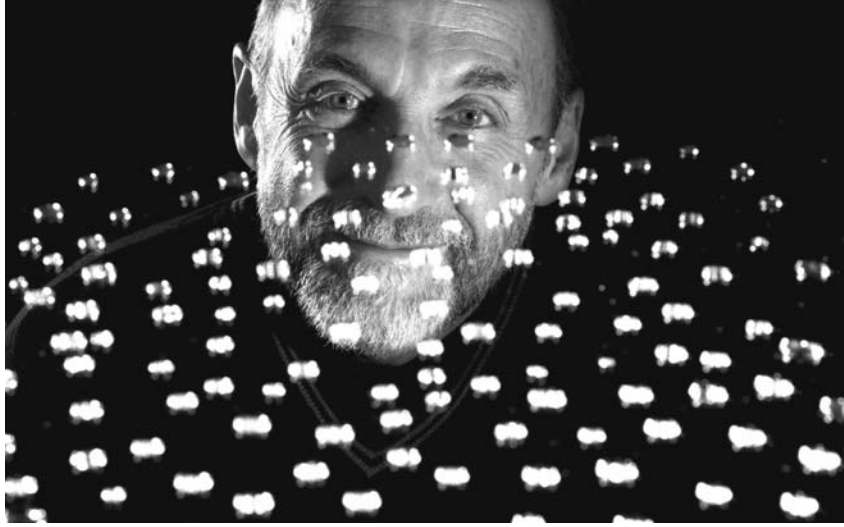
(Continued from page 1)

Now Peter has written, in his usual lucid style, the cover-story article of the current issue of *Physics Today*, the widely distributed publication of the American Institute of Physics. The article describes research leading up to his seminal paper and the papers following it.

Titled "The first wetting layer on a solid," the subhead explains that "for decades, researchers imagined that hydrogen bonding imposes a hexagonal, ice-like arrangement on the first water molecules on a solid.

Recent theory and experiments argue for a richer view."

Says Peter, "I had offered an explanation for the odd results of essentially the only quantitative measurement of atom positions on a wetting layer. As I recount in my review, this explanation stirred up a lot of interest, controversy, and further work, including several papers of my own." Thereafter, Peter did other work on water-solid



PETER FEIBELMAN has written the cover story of the February issue of *Physics Today*, the widely distributed publication of the American Institute of Physics. (Photo by Randy Montoya)

interactions, developing theoretical tools to help interpret data from (recently retired Sandian) Jack Houston's interfacial force microscope, and interpreting atomic-

other processes." Peter's article in *Physics Today* can be found at <http://tinyurl.com/ye9pa9vv> (subscription required).

resolution, scanning tunneling microscope pictures of water on metals.

The editors of *Physics Today* apparently noticed all the activity and emailed to ask Peter who he would recommend to write a review of what was going on.

"I gave them several names, but also said I'd be happy to give it a try," says Peter. "They asked for an outline. I gave them a 2,500 word stream-of-consciousness sample of what I had on my mind. They liked that enough to ask me to write the article."

The subject might seem abstract. But, as Peter writes in the opening paragraph of his review, "The first layer of water molecules at a surface is the structural template that guides the growth of ice, embodies the boundary condition for water transport, and mediates aqueous interfacial chemistry. It thus determines if rain will fall, how fast pollutants migrate in rock and soil, and governs corrosion, catalysis, and countless

DOE INCITE program fosters computational insights

Sandia researchers awarded 73 million supercomputing hours for advanced research

By Neal Singer

Three computationally based Sandia research projects have been awarded 73 million of 1.6 billion supercomputing processor hours offered by DOE's INCITE program to advance cutting-edge work.

Another Sandia researcher is participating in a Los Alamos National Laboratory-led proposal that was granted 25 million hours.

Not just another meaningless acronym, INCITE (Innovative and Novel Computational Impact on Theory and Experiment program) is meant to provoke researchers into attempting new discoveries in areas as diverse as climate change, alternative energies, life sciences, and materials science.

"Computation and supercomputing are critical to solving some of our greatest scientific challenges," said DOE Secretary Steven Chu. "This year's INCITE awards reflect the enormous growth in demand for complex modeling and simulation capabilities, which are essential to improving our economic prosperity and global competitiveness."

Sixty-seven million hours of computing time



JOSEPH OEFELEIN

Sixty-seven million hours of computing time on Oak Ridge National Laboratory's Cray XT were awarded to **Jacqueline Chen** and **Joseph Oefelein** (both 8351) to improve "High-Fidelity Simulations for Clean and Efficient Combustion of Alternative Fuels." While it's apparent that alternate fuels are moving into position to supplement gasoline, there is as yet no intimate understanding of the burning processes of these substitute fuels. Better understanding is crucial to most efficiently extracting the energy they could provide. The team will investigate turbulently reacting flow processes in an actual internal-combustion-engine geometry in actual operating conditions, as well as underlying turbulence-chemistry interactions in laboratory-scale flames. Participating in the

research will be Sandia's Jeffrey Doom, Ray Grout, Bing Hu, Guilhem Lacaze, Edward Richardson (all 8351), and Ahren Jasper and James Miller (both 8353), as well as researchers from Cornell University, the University of Minnesota, and Argonne and Oak Ridge national laboratories.

Another Sandia proposal, "Scalable System Software Research for Extreme-Scale Computing," will be led by **Ron Oldfield** (1422), with coinvestigators James Laros (1422) and (all 1423) Ronald Brightwell, Kurt Ferreira, Suzanne Kelly, Kevin Pedretti, and Rolf Reisen. The project was awarded 5 million processor hours on Oak Ridge National Laboratory's Cray XT "to significantly advance the state of the art for system software on the next generation of HPC systems." The work will concentrate on investigating scalability issues for research in lightweight operating systems, program resilience, input/output, power efficiency, and debugging.

Ronald Minnich (8961) will lead a research group from four other institutions (Carnegie-Mellon University, Bell Labs, IBM, and Vita Nuova) to develop a new software environment for supercomputers that make each appear to be part of the user's desktop system instead of a remote and hard-to-access external computer. Their proposal, "BG/P Plan 9 Measurements on Large Scale Systems" was granted 1 million hours on Argonne's IBM Blue Gene/P supercomputer. Plan 9 is an operating system built with networks in mind.

Sandia researcher **Mark Taylor** (1433) is a coinvestigator on the LANL-led study "Numerical Study of Multiscale



JACKIE CHEN

Coupling in Low-Aspect Ratio Rotating Stratified Turbulence" that will deal with the complicating effects on climate models of nonhydrostatic factors like local topographic features. A statistical description of these effects "would have a profound effect on our understanding of how ocean/atmosphere/climate models need to handle their fluid dynamics component, particularly when it comes to prediction of long-term phenomena . . ." The project was granted 25 million processor hours on Argonne National Laboratory's IBM Blue Gene/P supercomputer.



MARK TAYLOR



The following information from DOE's INCITE website answers frequently asked questions about the program. For more, go to www.er.doe.gov/ascr/incite.

What is INCITE?

Each year the Innovative and Novel Computational Impact on Theory and Experiment (INCITE) program awards to researchers millions of supercomputer processor hours and 100 trillion bytes of data storage space at DOE's leadership computing facilities for unclassified supercomputing, which include some of the most powerful computers in the world.

The program seeks computationally intensive, large-scale research projects that can make high-impact scientific advances through the use of a substantial allocation of computer time and data storage. The INCITE program specifically encourages proposals from research organizations including universities, national laboratories, and industry.

Who manages INCITE?

Beginning in 2010 the INCITE program is jointly managed by DOE's leadership computing facilities at Argonne National Laboratory and Oak Ridge National Laboratory. The scientific review of proposals will continue to be carried out by external groups of experts from national laboratories, universities, and industry, National Academy members, and senior computational science researchers who have a working knowledge of the current computational challenges and opportunities in their fields.

How are INCITE projects chosen?

INCITE proposals are subjected to two reviews: (1) computational readiness and (2) scientific.

In the computational-readiness review, each leadership computing facility evaluates all qualified proposals for the readiness and scalability of the code and its algorithms. Experts are drawn from the facility staff and other institutional personnel who are well-versed in the unique requirements of the leadership-class systems as well as experts from the computational science community, as needed. Reviewers are given the opportunity to submit a list of questions to the project's principal investigator to clarify vague or incomplete proposal information.

In the scientific review, the INCITE program solicits independent scientific peer reviewers to evaluate each proposal's potential for scientific impact. Proposals are evaluated on scientific quality, the expected impact of the science, the abilities of the principal investigator and the proposed research team, and the computational plan. Scientific review groups are composed of application domain experts from national laboratories, universities, and industry; National Academy members; and senior computational science researchers who have a working knowledge of the current computational challenges and opportunities in their fields.



RON MINNICH



RON OLDFIELD

Survey says . . .

(Continued from page 1)

becoming familiar with the two-year-old *Lab News Interactive* (<https://info.sandia.gov/newscenter/interactive/>), but that most of their connection with this web-based, interactive edition of the *Lab News* is through participation in its regular employee polls.

For the first time, Labs retirees also had a chance to respond to a formal survey about the *Lab News*. More than 400 responded either online or by completing a printed survey (see “. . . and so do retirees” below right.)

Some results specific to the printed *Lab News*

- As was the case in 2006, readers scored the newspaper on a scale of 1-5 (with 5 being the best) on readability, credibility, relevance/usefulness, timeliness, thoroughness, and photo/illustration quality. Scores were higher this year than in 2006 for all those attributes except for relevance/usefulness. At least 68 percent of those taking the survey marked a 4 or 5 on all those listed attributes. In 2006 the relevance/usefulness tally was almost 69 percent (compared to 68 percent this year).

- This year 73 percent of those responding graded the *Lab News* overall as “Excellent” or “Very Good.” This compares with 74 percent in 2006.

- In 2006, 32 percent reported they were reading most of the *Lab News*, compared to 37 percent this year.

Yet this year, almost 29 percent indicate they read less than half or nothing at all of each issue vs. 20 percent in 2006.

- In response to a new question this year, 63 percent said a printed-on-paper edition of the *Lab News* is important to them.

Some specific results about the *Daily News*

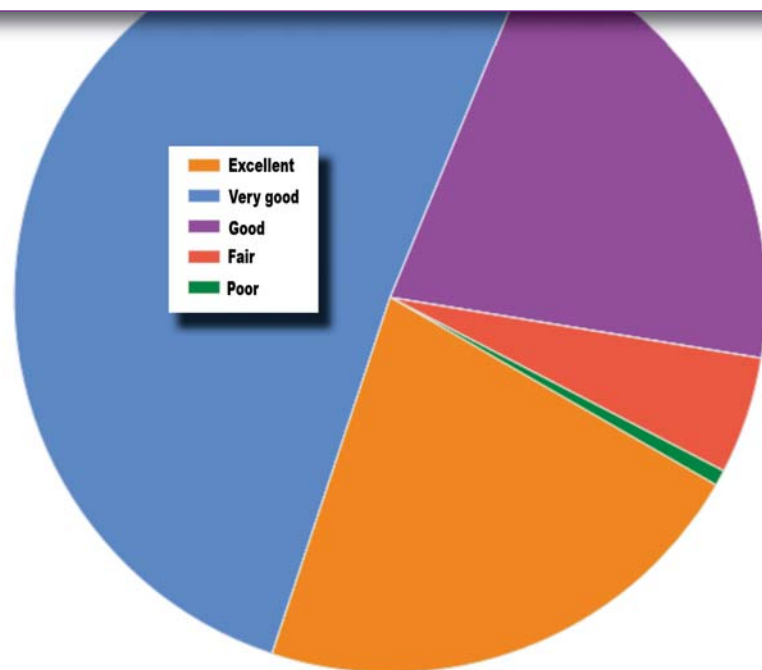
- This year, 68 percent rated this Monday-Thursday publication as “Excellent” or “Very Good” vs. 66 percent in 2006.

- This year 89 percent said they read at least half of each issue. In 2006 that total was 84 percent.

- Other *Daily News* scores for 2010 vs. 2006: Readability—89 percent/84 percent; Credibility—92 percent/86 percent; Timeliness—92 percent/87 percent.

- For both this year and 2006, 92 percent of survey-

In general, how do you rate the Sandia Lab News



takers said they prefer to access *Daily News* via email rather than the Intranet posting, which appears on the Newscenter at <http://info.sandia.gov/newscenter/sdn>.

Some specific results about *Lab News Interactive*

Lab News Interactive (<https://info.sandia.newscenter.interactive>) began mod 1.0 operation in 2007, and premiered mod 2.0 operation in November 2008.

- Four percent of sur-

vey participants said they refer to *Lab News Interactive* “several times a week,” 42 percent “several times a month,” and 54 percent indicated they do not use the online publication.

- Forty-six percent of those responding said they regularly or periodically participate in *Lab News Interactive* employee polls. (Note: Employee input through this means can influence Labs activities. For example, one of these polls significantly influenced the design of Family Day 2009.)

- Just over 8 percent of respondents say they’ve participated in at least one of the *Lab News Interactive* blogs (<https://info.sandia.gov/newscenter/interactive/index.php/blogs>).

SurveyMonkey offers flexible analysis

As was the case in 2006, this year’s survey was hosted by SurveyMonkey (www.surveymonkey.com), a web-based survey tool. Its flexibility permits myriad ways to analyze survey results in an effort to gain in-depth understanding. Some examples:

- Just over 48 percent of employees with five or fewer years at the Labs indicated that a printed-on-paper *Lab News* is important to them, while 74 percent of employees with at least 20 years on the job indicated that the paper version of important to them. This trend will take on increasing significance as Labs demographics change.

- Sixty percent of non-management MTS employees completing the survey described the *Daily News* as either excellent or very good, but 83 percent of non-management MLS employees put the publication in those two classifications.

If you are interested in receiving a copy of the entire summary results of the employee readership survey for 2010, email Rod Geer at wргеer@sandia.gov. He will provide you a copy.

Some shuffling of top 10 most-often read <i>Lab News</i> story types — 2010 vs. 2006		
	2010	2006
1	Technical stories	Employee service award/retiree photos
2	Classified Ads	Feedback Q&A feature
3	Feedback Q&A feature	Classified Ads
4	Employee service award/retiree photos	Labs Accomplishments special issue
5	Employee profiles/features	Technical stories
6	Historical stories	Employee honors/awards
7	Admin./Mgmt. news	Historical stories
8	Labs Accomplishments special issue	Employee profiles/features
9	Employee obits	“State of the Labs” interview
10	Human Resources news	“This Month in the Past” feature

Readers have their say . . .

A collection of questions in the survey invited employees to comment about *Lab News*, *Daily News*, and *Lab News Interactive*. Just over 900 such comments came in. Here’s a very small, but representative sample.

About the *Daily News*

- I appreciate the reminders and updates in the *SDN*.
- There used to be a lot more references and links to relevant news stories and publications . . . I miss them.
- I miss the old science/world news. Since that went away, I scan and delete.
- It is unclear what can and can’t be posted in the *Daily News*. Some info appears to be personal vs. lab-appropriate.
- Read it daily and am grateful for the news included. Wouldn’t know about some activities otherwise.
- This is my main source of information on current events and classes.
- Often *SDN* misses major CA events, announcements, etc. CA has its own daily news service, but it would be nice if *SDN* could just encompass everything.

About the *Lab News* printed edition

- I want to be clear that I read “That’s That” only because it’s one of those things one loves to hate.
- Articles are great for the historical perspective of people places and things . . . That is the feature I find most valuable.
- Waste of paper and money to print this.
- Our OAA doesn’t distribute the *Lab News* to each desk or let us know that it is here.
- I like it and hope we keep it (the printed edition). My husband — not a Sandian — won’t let me in the door on that Thursday it comes out if I don’t have one in hand!
- The *Lab News* tends to be too much a political organ of Lab management.
- Too expensive to continue. I see a lot of left over papers and papers in the trash not recycled . . .
- The population isn’t that stupid. Call a spade a spade.
- Thank you for keeping us informed!

About the Intranet-based *Lab News Interactive*

- Poll results are interesting snapshots of employee perspectives on current SNL issues.
- It does help this huge lab feel like more of a community.
- I still have not had the time to access the *Lab News Interactive* and explore it.
- I cannot think of anything very valuable that I received there and would not have received in other ways.
- The blog information, poll results, and comments are stuff that I read and enjoy.
- It’s an easy way to voice an opinion or read the views of others that wouldn’t otherwise be heard. They cover topics that are “hot-items” around the Lab that people are concerned/interested about.
- I’ve never used it and wouldn’t know where to go to find it.
- I probably SHOULD use it — but I don’t.
- Outstanding work. Keep it up as I enjoy what it is that you all do. And it keeps me informed. Thanks.
- Most of the blogs are not updated frequently enough.

. . . and so do retirees

More than 400 Labs retirees from around the country responded to a first-ever *Lab News* readership survey designed for them. Unless retirees opt out, receiving a printed copy of the *Lab News* is a defined retiree benefit.

Survey results show this target audience tends to read more of each issue than the average on-the-job Sandia: 89 percent reported they read at least half of each issue compared to 81 percent for current Sandians.

Almost 84 percent of retirees said the printed *Lab News* is important to them.

The most popular *Lab News* features selected by responding retirees were a bit different than those of employees. Technical stories also topped the retiree list, followed by employee service award/retiree photos, and employee obituary features.

Retirees learned about the survey by means of an email alert sent to a listing of about 1,100 who have provided email addresses to Sandia, a *Lab News* appeal appearing in its Jan. 15 edition and a notice sent to Sandia retiree members of the Coronado Thunderbirds Club. Also, a printed version of the survey was offered to retirees who requested a copy.

Retirees interested in receiving summary results of their readership survey should email Rod Geer at wргеer@sandia.gov, or contact Bill Murphy, *Lab News* editor, at 505-845-0845.

Sandia National Laboratories in Numbers - 1-28-10

(FY 2009 Actual and FY 2010 Estimates)

(Budget Authority in Millions)

TOTAL REVENUE BY CATEGORY	FY09 Actual	FY10 Target	% Change from FY08
OPERATIONS AND MAINTENANCE	\$ 2,281.0	\$ 2,364.4	3.7%
CAPITAL EQUIPMENT	\$ 82.5	\$ 21.6	-73.8%
CONSTRUCTION	\$ 37.1	\$ 21.5	-42.1%
TOTAL SNL REVENUE	\$ 2,400.7	\$ 2,407.5	0.3%

(Budget Authority in Millions)

TOTAL REVENUE BY SOURCE	FY09 Actual	FY10 Target	% Change from FY08
ENERGY & WATER DEVELOPMENT APPROPRIATIONS			
Weapons Activities	\$ 1,008.9	\$ 956.5	-5.2%
Defense Nuclear Nonproliferation	\$ 156.5	\$ 197.4	26.1%
TOTAL NNSA	\$ 1,165.4	\$ 1,153.9	-1.0%
Energy Efficiency and Renewable Energy	\$ 99.4	\$ 96.1	-3.3%
Nuclear Energy Science & Technology	\$ 8.4	\$ 8.1	-3.0%
Science Programs	\$ 76.3	\$ 57.7	-24.3%
Environmental Management	\$ 15.9	\$ 17.7	11.2%
Other Defense Activities	\$ 14.7	\$ 14.6	-1.0%
Radioactive Waste Management	\$ 56.7	\$ 43.4	-23.4%
Fossil Energy	\$ 9.3	\$ 5.5	-40.2%
Other DOE	\$ 10.8	\$ 27.5	153.6%
TOTAL DOE FUNDING	\$ 1,456.8	\$ 1,424.6	-2.2%
NON-DOE (Work For Others) FUNDING	\$ 943.9	\$ 983.0	4.1%
TOTAL SNL REVENUE	\$ 2,400.7	\$ 2,407.5	0.3%

(Budget Authority in Millions)

TOTAL REVENUE BY STRATEGIC MANAGEMENT UNIT	FY09 Actual	FY10 Target	% Change from FY08
Nuclear Weapons	\$ 1,053.7	\$ 1,002.4	-4.9%
Defense Systems and Assessments	\$ 738.0	\$ 770.0	4.3%
Energy, Resources and Nonproliferation	\$ 435.0	\$ 477.8	9.8%
Homeland Security	\$ 174.0	\$ 157.3	-9.6%
TOTAL SNL REVENUE	\$ 2,400.7	\$ 2,407.5	0.3%

(Costs in Millions)

TOTAL COSTS BY STRATEGIC MANAGEMENT UNIT	FY09 Actual	FY10 Target	% Change from FY08
Nuclear Weapons	\$ 1,013.9	\$ 1,059.8	4.5%
Defense Systems and Assessments	\$ 700.5	\$ 805.0	14.9%
Energy, Resources and Nonproliferation	\$ 372.7	\$ 519.4	39.4%
Homeland Security	\$ 154.6	\$ 193.0	24.9%
TOTAL SNL COSTS	\$ 2,241.7	\$ 2,577.2	15.0%

(Costs in Millions)

INDIRECT OPERATING COSTS	FY09 Actual	FY10 Target	% Change from FY08
Laboratory Directed Research and Development *	\$ 148.0	\$ 166.0	12.2%
INDIRECT (Includes IES, Div. Support, Mgt. Fee & Taxes)	\$ 470.5	\$ 521.0	10.7%
Fringe	\$ 279.0	\$ 313.2	12.3%
TOTAL INDIRECT COSTS	\$ 897.5	\$ 1,000.2	11.4%

* FY09 and FY10 LDRD costs include overhead as directed by Congress.

Staffing (Full-Time Equivalents - FTEs)

TOTAL FTEs (SMU & Indirect)	FY09 Act.	FY10 Est.	Change
Direct FTEs by SMU (Includes Service Centers and Program Mgt.)			
Nuclear Weapons	2,533	2,455	-78
Integrated Technologies and Systems	9	12	3
Defense Systems and Assessments	1,860	1,975	115
Energy, Resources and Nonproliferation	622	681	59
Homeland Security & Defense	372	418	46
Total Direct FTE's	5,396	5,541	145
Indirect FTEs:			
LDRD	383	395	12
All Other Indirect	2,389	2,349	-40
Total Indirect FTEs	2,772	2,744	-28
TOTAL SNL FTEs	8,168	8,285	117

OVERVIEW OF SANDIA NATIONAL LABORATORIES (As of 9/30/09)

ATTRIBUTES:	Acres of Land Mass	Number of Buildings	Sq. Feet of Buildings	Site Population
SITE:				
New Mexico Site	8,642	847	5,822,908	9,776
California Site	413	70	877,339	1,133
Tonopah Test Range	179,200	107	129,724	20
Kauai Test Facility	132	54	57,560	1
Leased Space @ All Other Sites	0	43	482,242	437
TOTALS	188,387	1,121	7,369,773	11,367

NOTE: The land acreage in New Mexico no longer includes buffer zones.

NOTE: Site Population includes limited-term employees, students, post docs and contractors.

UNIQUE ASSETS OF SANDIA NATIONAL LABORATORIES

- Tonopah Test Range
- Kauai Test Facility
- Microelectronics Development Lab (MDL)
- Rocket Test Capability
- Above Ground Test Facilities
 - Reactors (ACRR, Gamma Radiation Facility, etc.)
 - Accelerators (Z facility, Saturn, Hermes, etc.)
- Integrated Test Complex (Integrated thru Model Validation & Sys. Cert. Test Ctr.)
 - Rocket Sled Track
 - Centrifuge
 - Vibration Facilities
 - Cable Site
 - Thermal Test Facility
 - Underwater Test Facility
 - Lightning Facility
- Computer Facilities
 - ASCI Red
 - C-Plant
 - Joint Computational Engineering Laboratory (JCEL)
 - Distributed Information Systems Laboratory (DISL)
- Combustion Research Facility (California)
- Explosive Component Facility (ECF)
- Processing & Environmental Technology Laboratory (PETL)
- Robotics Manufacturing Science & Engineering Laboratory (RMSEL)
- Weapons Evaluation Test Laboratory (WETL) at Pantex
- Microsystems Engineering & Sciences Applications (MESA) Fac.
- Center for Integrated Nanotechnologies (CINT)

(Budget Authority in Millions)

CONSTRUCTION PROJECTS	FY08 Act.	FY09 Act.	FY10 Target
Microsystems Engin. Science App. 01-D-108	\$ 5.3	\$ -	\$ -
Test Capability Revitalization, Ph. II, 09-D-404	\$ -	\$ 3.1	\$ 3.2
Ion Beam Lab Refurbishment 08-D-806	\$ 9.9	\$ 24.9	\$ -
TA-1 Heating System Modernization 07-D-253	\$ 12.0	\$ 15.3	\$ 9.9
Deobligations - Closed Construction Projects	\$ (9.2)	\$ (18.9)	\$ -
TOTAL LINE-ITEM CONSTRUCTION	\$ 18.0	\$ 24.4	\$ 13.1
Gen. Plant Projs. & Facilities Infras.	\$ 15.5	\$ 14.7	\$ 13.2
TOTAL SNL CONSTRUCTION FUNDING	\$ 33.5	\$ 39.1	\$ 26.3
TOTAL SNL CONSTRUCTION COSTS	\$ 24.5	\$ 40.0	\$ 53.4

REGULAR ON-ROLL EMPLOYEES (yr. E	FY08	FY09	Change
Albuquerque, NM	7,328	7,169	-159
Livermore, CA	805	801	-4
Other Locations	267	262	-5
TOTALS	8,400	8,232	-168

AVERAGE AGE OF EMPLOYEES	FY08	FY09	Change
Albuquerque, NM	47	48	1
Livermore, CA	46	47	1

College Degrees	BA/BS	MA/MS	PHD	OTHER
No. of Employees	1,323	2,829	1,577	2,503

Years of Service	0 - 10	11 - 20	21 - 30	31 - ++
No. of Employees	3,635	1,907	2,031	659

Sandia manager Jim Novak to be inducted into Anderson School Hall of Fame

By Julie Hall

Jim Novak (5935) wants his experiences as a technology entrepreneur to benefit others considering taking the plunge. As a frequent speaker to groups of potential entrepreneurs, Jim talks about lessons learned during his foray into entrepreneurship from 1997 to 2001.

Now the University of New Mexico's business school is honoring him for his contributions to entrepreneurship education; Jim will be inducted into the Anderson School of Management's Hall of Fame next month along with five other local individuals. Jim received his MBA from UNM in 1996.

"These candidates are selected for their professional success, contribution to community involvement, and an ongoing commitment to continuing education," Anderson Foundation board advancement committee chair Sheri Milone said in a press release.

The honorees will be recognized March 9 at the 21st Anniversary Hall of Fame reception and dinner at UNM.

An accidental entrepreneur

When Jim came to Sandia in 1988 the last thing he planned to do was launch a company. An electrical engineer, Jim had been recruited to develop sensing technology for robotic applications.

One of his projects involved fringing electric field technology as part of an automatic manufacturing system. He and Jamie Wiczor (ret.) had developed the technology, which proved useful

in a variety of applications, most involving situations in which optical sensors could not be used.

In the early 1990s, a cooperative research and development agreement (CRADA) with Rocketdyne, manufacturer of the main engine for the space shuttle, led to the invention and patent of a fringing field-based sensor that enabled automated braze paste dispensing of the rocket thrust chamber assembly. Called the Multi-Axis Seam Tracking (MAST) sensor, it guided the robotic brazing compound equipment along the seams

of the assembly in real-time. The procedure had previously been done manually.

By the time Rocketdyne requested additional sensors, the CRADA had expired and Sandia was unable to provide the sensors. Jim recognized this as a business opportunity, but "I realized my PhD left me clueless about business."

He decided to enroll in UNM's two-year Executive MBA program and the first business plan for what was to become his new company resulted. After forming SenSolve and licensing the sensor intellectual property from Sandia, Jim left the Labs in early 1997.

Bad timing

Initially housed in his garage, SenSolve's future seemed promising. The robotics industry was growing rapidly, the company was doing contracting work for several small business clients, had attracted \$800,000 in venture capital through the New Mexico Equity Capital Symposium, and had six employees. In May 2000 SenSolve launched its first product.

However, by this time the dot-com collapse was well underway. Markets for manufacturing automation equipment dried up. SenSolve struggled but endured through the summer of 2001, but the decision was made to shut down the company in September 2001. Jim says he remembers working to sell off the company's assets while watching the events of 9/11 unfold on TV. In a painful "twisting of the knife," work with a major auto manufacturer involving welding aluminum in a new SUV model came through shortly after 9/11 but the equipment needed to support the work had already been liquidated.

He was rehired at Sandia in 2003.

"Launching a company when all the dot-coms were crashing was really bad timing," he says. But he realizes the outcome was a combi-



JIM NOVAK



JIM NOVAK holds a SenSolve product called the ST-90 Surface Tracker in this photo taken in 1999 at the company's offices. Jim launched and ran the company from 1997-2001.

nation of many factors, some within and some outside of SenSolve's control.

His talks to potential entrepreneurs through Technology Ventures Corp.'s Center for the Commercialization and Entrepreneurial Training seminar series focus on major issues that must be managed properly to ensure success — and especially the need to recognize the existence of problems in the first place.

Jim says he's excited about applying lessons learned from his entrepreneurial stint here at Sandia. As manager of the Systems Technologies Department, part of his job involves generating "work for others" contracts from agencies other than DOE. "The business background helps me see where they're coming from," he said. "They want to see a business that's delivering a product and it's my job to assure them that Sandia can do that."

Jim Novak will present "Lessons Learned in Equity Capital Negotiations" on April 1 as part of the TVC Center for Commercialization & Entrepreneurial Training seminar series. See details below right.

Technology Ventures Corp.'s Center for Commercialization & Entrepreneurial Training and Sandia present: Taking Technology-Based Innovations To The Commercial Market

TVC's Center for Commercialization & Entrepreneurial Training's entrepreneur development program has been highly successful in fostering technology-based innovations coming out of the national laboratories, universities, and business communities. This intensive how-to education program incorporates an extensive national experience base with local professional and academic subject-matter expertise.

These free-of-charge seminars are held in the Bldg. 823 Breezeway 11:30 a.m.-1 p.m. Lunch will be served. RSVP to Margaret Speer at 505-843-420 or (margaret.speer@lmco.com)

Thursday, Feb. 18

ENTERING THE ENTREPRENEURIAL WORLD

This session introduces the concepts and issues of commercializing a technology-based product and analyzing the business and financial potential of a product.

Thursday, Feb. 25

PREPARING AND PRESENTING THE BUSINESS PLAN

This session takes the entrepreneur step by step through the process of developing and writing a business plan directed toward achieving equity financing for his/her innovation and company.

Thursday, March 4

MARKET RESEARCH AND THE MARKETING PLAN

This session discusses the significant endeavor in determining the market potential of a product, understanding the dynamics in the marketplace, and producing a marketing plan.

Thursday, March 18

FINANCIAL MANAGEMENT

This session explores raising capital, understanding and using financial statements, preparing budget projections and pro forma financial statements, and company valuation.

Thursday, March 25

OPERATIONS STARTUP AND ORGANIZATION STRUCTURE

This session describes the business organization development process and the essential legal, accounting, taxation, and securities issues.

Thursday, April 1

ATTRACTING EQUITY INVESTORS AND LESSONS LEARNED

This session discusses the developing relationships with investors and intellectual property. We will also gain the benefit of hearing from those individuals who have experienced the equity funding process.

The seminars are presented in partnership with DOE, Lockheed Martin, and Sandia's Intellectual Property Management, Alliances, and Licensing organization.

Qatari delegation visits Labs



At the request of the US Department of State and DOE, Sandia hosted Sheikh Hamad bin Ali Al-Thani, a member of the Qatar royal family, along with a delegation including Al-Thani's assistant, Ahmed Samy Mohamed Helal, interpreter Moataz Elshehawy, and Abdulatif Yassin of the Qatar Ministry of Environment. The Jan. 31-Feb 1 visit was conducted in coordination with Ambassador Joseph Le Baron of the US embassy in Doha, Qatar. The visit served to engage the Qatari delegation in discussions about international nuclear cooperation, with a focus on nonproliferation and renewable, sustainable energy technologies. Labs Director Tom Hunter and Div. 6000 VP Les Shephard served as hosts. There were additional presentations in microelectronics and nanotechnology in tandem with programs associated with the Center for Integrated Nanotechnologies (CINT). In the photograph here, Div. 6000 VP Les Shephard describes studies associated with reactors subject to dry conditions. To the immediate right of Les are Moataz Elshehawy and Abdulatif Yassin. At far right, Helal assists Sheikh Al-Thani, who is seated, during a tour of the Cooperative Monitoring Center's training and demonstration area in Sandia's International Programs Building. Les is currently transitioning out of his VP position to take a faculty position at the University of Texas, San Antonio. Center 6200 Director Margie Tatro is serving as acting VP for the division. In an upcoming issue, Les talks with the *Lab News* about his experiences at Sandia and his thoughts about how the Labs can help the nation address critical issues in the years ahead.

(Photo by Randy Montoya)

EWEEK

Robin Jones (4826) is president of the Albuquerque chapter of the New Mexico Society of Professional Engineers. She joined Sandia in 2009 and is project lead in Building Operations — Area 1 North.

A California native, Robin earned a BS in environmental engineering at New Mexico Tech and received her MS in civil and environmental engineering from Stanford. From 1999 to 2001, Robin worked for the Los Angeles, Calif., County Sanitation Districts in a field office based out of Compton. Her area of responsibility was the California coastline from Redondo Beach to Long Beach.

Robin moved to Albuquerque in 2001 and worked for Daniel B. Stephens & Associates for a year before joining the international environmental engineering company CDM. While there, she designed, constructed, and operated groundwater remediation systems in New Mexico and California.

Robin is a licensed professional engineer in New Mexico and California. She wrote the following essay at the request of the *Lab News*.

While having lunch with a friend, who I hadn't seen since high school, she asked me a question that made me reflect on my career. At the time she was working in the marketing department of a law firm. She was not enjoying the job. She asked me if I found my work personally fulfilling, was I proud of what I did.

At age 25 I found myself crawling on hands and knees, up to my elbows in sewage, through a 27-inch sewer line to determine if an opening in a joint between the pipe sections was within tolerances. Though not my most glamorous day as an engineer, the task was necessary because not only is a leaking sewer pipe a risk to human health, but because this sewer pipe traversed an active landslide area, excess soil moisture could activate the landslide causing millions of dollars in property damage. I was doing my part to protect human health and welfare. Several years later I was working in groundwater remediation, designing treatment systems that removed carcinogenic chemicals and made the water suitable for human consumption. I was one of a large team providing people with an essential element of life: drinking water. I now find myself working in Facilities Building Operations for Sandia National Laboratories. I am part of a team that ensures our nation's top scientists and engineers have the laboratories and facilities necessary to perform cutting edge research to advance technology and provide a secure future for our nation.

Has my choice of career provided personal fulfillment? Am I proud of the work I have done as an engineer? YES!

I think most engineers will have stories similar to mine about why they are proud of the work they do and why they find it personally gratifying. This is because the nature of engineering work is to help people. The car, the road, the traffic lights, the drainage system are all provided by engineers to get people safely to where they need to go. The heavy equipment that clears the rubble, the ships, helicopters, and trucks that bring supplies, and the knowledge to rebuild stronger are all the work of engineers helping after a disaster. Whether people realize it or not everyone is surrounded by engineering everyday and for the most part they take it for granted.

Engineering is not a highly publicized profession. It has been called the "invisible" or "stealth" profession. We don't have hit TV shows dramatizing the work of engineers. This may be because when engineering is done right it can be invisible. In the sanitary sewer business we knew we were doing a good job when people were unaware of their sewer system. However, potable water and sanitary sewers probably do more for

public health than the public health profession (which has lots of hit TV shows).

National Engineers Week (Feb. 14-20) is celebrated during the third week in February in honor of "America's first engineer," George Washington, whose birthday is Feb. 22. The purpose of Engineers Week is to promote awareness of engineering

as a profession and the contributions of engineers. Would you like to see engineering get the recognition it deserves? Consider joining and actively participating in one of the many engineering professional societies. These societies work to raise awareness and preserve the integrity and professionalism of engineering. Are you a licensed professional engineer? Though you may never be called on to "stamp" anything, licensure is the mark of your dedication and skill as professional. Would you trust an unlicensed doctor or lawyer? Licensed engineers assure the public and remind them that engineering is a profession to be respected. The National Society of Professional Engineers (NSPE) adopted the following creed in 1954:

As a Professional Engineer, I dedicate my professional knowledge and skill to the advancement and betterment of human welfare. I pledge: To give the utmost of performance; To participate in none but honest enterprise; To live and work according to the laws of man and the highest standards of professional conduct; To place service before profit, the honor and standing of the profession before personal advantage, and the public welfare above all other considerations. In humility and with the need for Divine Guidance, I make this pledge.

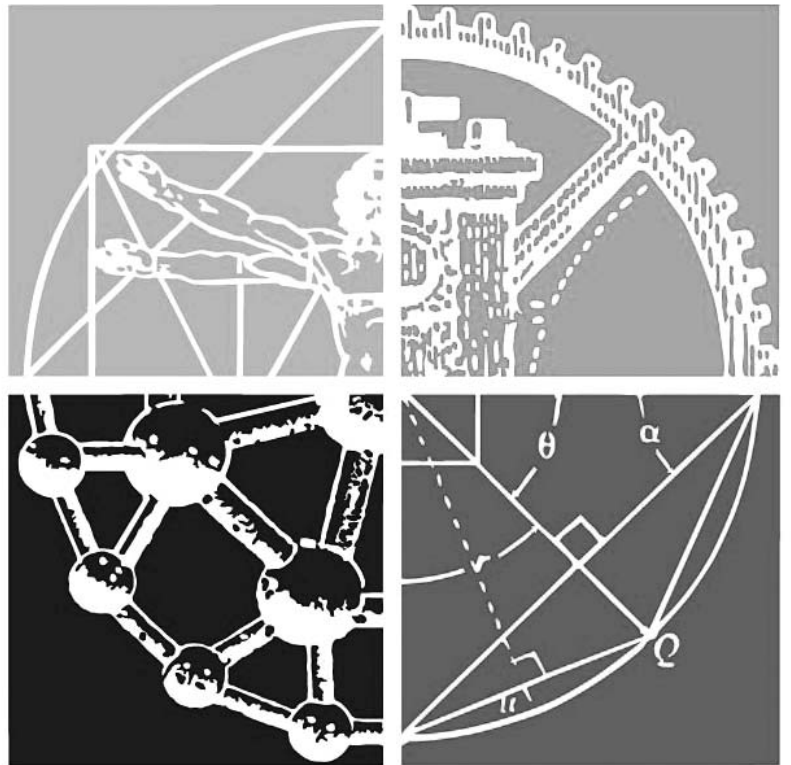
Celebrate being an engineer this week! Congratulate yourself for the work you do every day for the betterment of humanity and be proud. Then take that pride and share it with a young person. Show them how they can make a difference in the world and give them the gift of knowing in their hearts, "I helped humankind today."

Robin M. Jones, P.E. (4826)



ROBIN JONES, P.E.

Photo by Randy Montoya



ENGINEERS WEEK® 2010

February 14 - 20

About the New Mexico Society of Professional Engineers

The NMSPE works to protect the interests of professional engineers in New Mexico by staying apprised of and becoming actively involved in activities of the Board of Licensure and legislature that affect professional engineers. We encourage professional licensure by offering review classes for the Professional Engineers Exam and professional development hours through our luncheons, conferences, and ethics seminars. NMSPE also promotes and raises awareness of the profession of engineering. All funds raised by NMSPE go to support scholarships for engineering students and middle school programs such as Math-COUNTS. Albuquerque Chapter monthly luncheons are open to everyone. Luncheons are generally held on the second Monday of the month. (However, the March meeting will be held on March 9 at the Marriott Uptown starting at 11:45.) Our luncheon speakers cover a wide range of topics of interest to engineers. Some examples of luncheon topics include alternative energy, financial and political outlooks, and building infrastructure modeling. More information on luncheons and other events can be found at <http://nmspealbuquerque.org>.

Mileposts

New Mexico photos by Michelle Fleming



Leonard Convissor
30 5336



Karen Erickson
30 5521



Ron Kulju
30 5919



Harold Morgan
30 1930



Rob Rechar
30 6782



Al Romig
30 3



Jeffrey Zirzow
30 6339



James Allen
25 6473



Jose Arguello
25 1525



Jeff Danneels
25 5921



Dora Derzon
25 1825



Martha Ernest
25 5526



Pablo Garcia
25 6320



Richard Harris
25 2990



Mark Miszkiel
25 5424



Harold Ortiz
25 5933



Ronald Sikorski
25 2994



Max Decker
25 5575



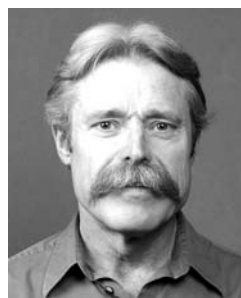
Terri Galpin
20 9515



Linda Gillis
20 9003



Reed Jackson
20 5635



Leslie Krumel
20 5425



Pat Milligan
20 9543



Elizabeth Monia de Madrid
20 10648



Nancy Nicolary
20 6200



Roger Plowman
20 413



Rick Ramirez
20 6482



Larry Schoof
20 400



Adam Slavin
20 547



Jennifer Powell
15 5935



Alfred Romo
15 10248



Laura Painton Swiler
15 1411

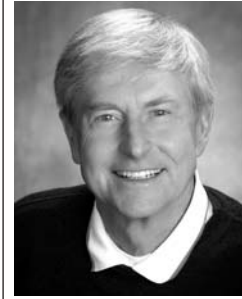


Peggy Warner
15 9532

Recent Retirees



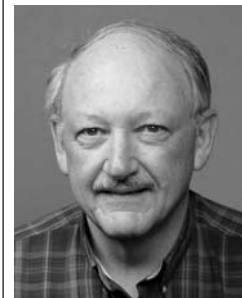
John Phelan
48 5416



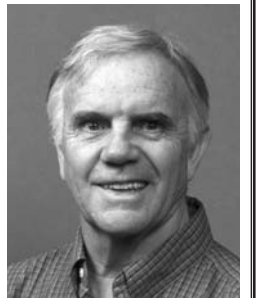
James Harrison
42 426



D. Mark Anderson
28 5525



Richard Mills
25 1716



Samuel Sevier
25 2111



Joe Durham
21 10544



Laurel Moore
18 3652



Carolyn Quinn
16 10694



Jennie Padilla
16 9537



Ellis Errett
15 1746



Retirements

Retiring and not seen in the Lab News pictures: Phyllis C. Rice (2712-3), 31 years; Dolores Sanchez-McGlotten (1640), 28 years; Cynthia Schneeberger (12410), 25 years; and Susan Sackinger (9343), 24 years.

Black History Month

By Iris Aboytes

Sponsored by Sandia's Black Leadership Committee, in honor of Black History Month, *Inside Buffalo* is a World War II documentary of the 92nd Buffalo Division and the 366th Combat Infantry Regiment and their battles in Italy during World War II. The motion picture follows Vernon Baker, the last living African American soldier to be awarded a Medal of Honor, as he recounts the events of his unit during wartime. Congressional Medals of Honor were not awarded to these soldiers until 1997, under the Clinton administration.

Americans have recognized black history annually

since 1926, first as "Negro History Week" and later as Black History Month. Black history had barely begun to be studied when the tradition originated. Although blacks have been in America at least as far back as colonial times, it was not until the 20th century that they gained a respectable presence in the history books.

"We owe the celebration of Black History Month and the study of black history to Dr. Carter Woodson," says Eunice Young (5518).

Woodson's parents were former slaves. He spent his childhood working in the Kentucky coal mines and enrolled in high school when he was 20 years old. He graduated within two years.

Woodson went on to earn a PhD from Harvard. He was disturbed to find that history books largely ignored the black American population. He chose the second week of February for Negro History Week because it marks the birthdays of two men who greatly influenced the black American population, Frederick Douglas and Abraham Lincoln.

Established several years ago, Sandia's Black Leadership Committee identifies black candidates for employment, maintains a relationship between the local black community and Sandia, and raises awareness on cultural issues to the general population, among other things.

Alpha Phi Alpha Fraternity and Sandia Black Leadership Committee invite you to a screening of:

INSIDE BUFFALO

February 19, 2010

11am to 1 pm

Manzano Mesa Community Center

INSIDE BUFFALO, a WWII documentary about the outstanding heroism of the 92nd Buffalo Division and the 366th Combat Infantry Regiment.

Following the viewing there will be a question and answer session with the director.

**INSIDE
BUFFALO**
by Fred Kudjo Kuwarnu

For more information email blc-chairs@sandia.gov

Vickie Robertson is new snack bar proprietor



(Photo by Randy Montoya)

Do you know who Vickie Robertson is? Vickie is the new snack bar proprietor. "It has taken a while to make it official," she says.

The snack bar is located directly south of Bldg. 800, outside Gate 2. It is open 7 a.m. until 4 p.m.

"With that done, I am hoping to have a greater inventory. I am open to suggestions."

Vickie would like her snack bar to become a Sandia hangout. "I want people to feel comfortable enough that they can escape here for a much-needed break. I am just a walk away."

Vickie says she is excited to be the new boss. She recently found out that the snack bar will be remodeled sometime in the summer. "I am hoping to be able to contribute ideas to its remodel," she says. "I want to make sure that it is warm and welcoming."

While all the paperwork was being made official, Vickie was running the snack bar. She says she has only one complaint — she would like to have more Sandians around.

Vickie has had retinitis pigmentosa since she was in sixth grade. She and her husband Rich have three children — Michele, Nick, and Rocky — and six grandchildren — Danny, Aiden, Devin, Jayly, Maycie, and Brooke.

— Iris Aboytes