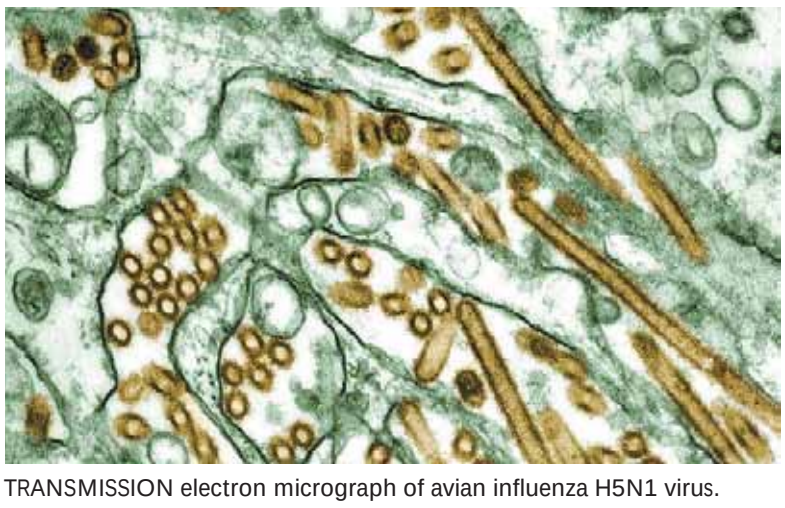
Bird flu concerns prompt Sandia pandemic preparations

Likelihood unknown, but getting ready worthwhile, says Labs' medical director

By John German

Experts don't yet know whether the bird flu will prove to be another doomsday false alarm or develop into a merciless worldwide epidemic, or pandemic.

Either way, preparing for a major public health threat is a worthwhile endeavor, says Warren Cox (10312), who coordinates the activities of a small multi-organizational Sandia team that is planning for a range of possible avian flu outcomes.



TRANSMISSION electron micrograph of avian influenza H5N1 virus.

Think about business continuity

"Preparing for an avian flu pandemic forces us to think about how the Labs would continue to operate, and how it would communicate with employees, contractors, retirees, and their families, if America awoke tomorrow to the rapid spread of a virus or other biological threat within its borders," he says. (See "Why Sandia is preparing" on page 4.)

The team's work complements other business continuity planning projects in recent years to prepare the Labs for terrorist attacks, natural disasters, and other crises.

"We tend to be less sensitive in the US to biological threats than in other parts of the world where infectious diseases, like TB and HIV, affect people's lives more profoundly," says Dr. Larry Clevenger (3300), director of Sandia's Health, Benefits, and Employee Services Center, who leads the planning team.

False assumptions

"Western civilization's assumption is we can whip it with antibiotics and technology," he says. "But because there is no natural immunity to avian flu in the human population, our experience is more likely to be like centuries-old phenomena."

Pandemics occur in varying severities on average four times per century. The most recent, the Hong Kong flu of 1968-1969, killed approximately 28,000 Americans. The most

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Sandia LabNews

Vol. 58, No. 10 May 12, 2006

Managed by Lockheed Martin for the National Nuclear Security Administration

Sandia National Laboratories

Inside

Desalination roadmap seeks technological solutions to make brackish water drinkable

Sandia researchers ready to complete research roadmap

By Chris Burroughs

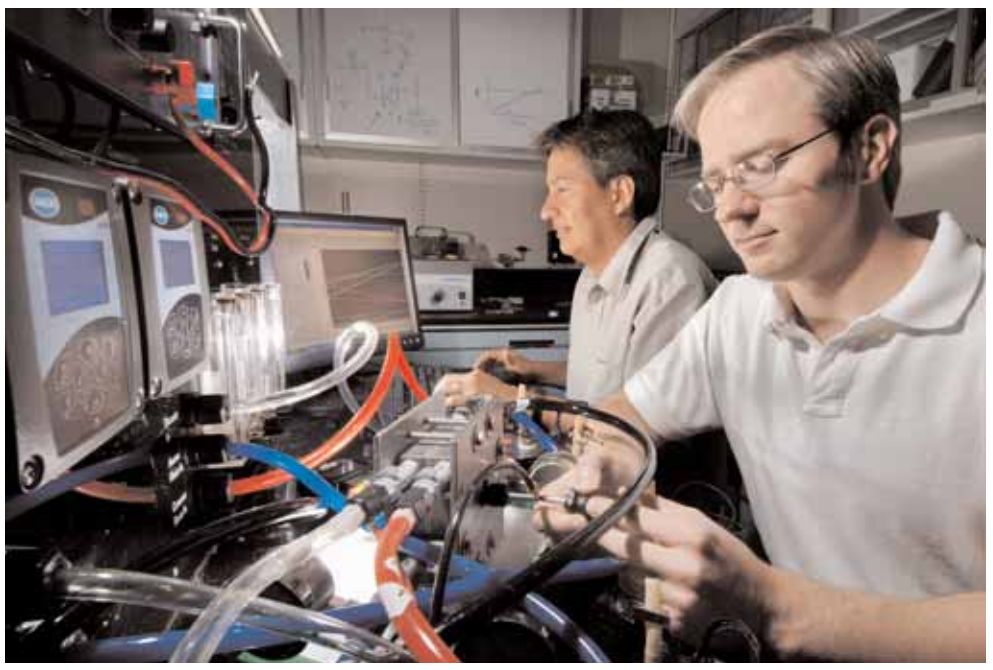
After one last meeting in San Antonio April 17, Sandia researchers Pat Brady and Tom Hinkebein (6118) are now ready to write a final Desalination and Water Purification Roadmap that should result in more fresh water in parts of the world where potable water is scarce.

The roadmap is the result of three previous meetings — two in San Diego and one in Tampa — and the last held this month where many government agency, national laboratory, university, and private partners gathered to discuss the future of desalination in the US. The first roadmap identified overall goals and areas of desalination research. It was submitted to Congress in 2003.

Pat expects the second roadmap to be completed this month when the Joint Water Reuse & Desalination Task Force will submit it to Sen. Pete Domenici, R-N.M., chairman of the Senate Energy and Water Development Appropriations Subcommittee, and Congress and eventually the water user and research communities. The task force consists of the Bureau of Reclamation, the Water-Reuse Foundation, the American Water Works Association Research Foundation, and Sandia.

The roadmap will recommend specific areas of potential water desalination research and development that may lead to technological solutions to water shortage problems.

"Population growth in the US is expected to increase 13.6 percent per decade [over the next two decades]," says Tom, manager of Geochemistry Dept. 6118 and head of Sandia's Advanced Concepts Desalination Group. "There will be 29 percent more of us in 20 years. Put that together with an unequal distribution of people — more moving to Texas, California, Arizona, and New Mexico where fresh water is limited — and it is easy to see we are facing a challenging water future."



A BETTER ELECTRODIALYSIS SYSTEM — Michael Hibbs, forefront, and Chris Cornelius (both 6215) check out an electrodialysis system that removes salts from water with an electric field and special ion exchange membranes. (Photo by Randy Montoya)

According to the 2003 Desalination and Water Purification Technology Roadmap, only 5 percent of the earth's water is directly suitable for human consumption. The other 99.5 percent is saltwater or locked up in glaciers and icecaps. As the world's population grows, the increased water demand will have to come from someplace. Brackish water — water with a salt content — seems to be a natural source, Tom says.

The new roadmap, Roadmap 2, will be a coherent plan outlining the specific research needed in high-impact areas to create more fresh water from currently undrinkable brackish water. It will ensure that different organizations are not duplicating research.

Water desalination is not a new concept. In the US the largest plants are in El Paso and

(Continued on page 4)

TOM HUNTER briefs members of the news media on issues regarding nuclear energy.

The future is now for nuclear power, say lab directors

By Will Keener

Sandia President and Director Tom Hunter joined eight other national laboratory directors or their personal representatives, several key members of Congress, and DOE officials last week in Washington to send a message to Congress and the public about President Bush's Global Nuclear Energy Partnership.

The message: GNEP is important at home and abroad, it's urgent that the US begin a long-range effort now, and the power of the national laboratory system, working as a team under DOE direction, is available to support the effort.

"We see this as a start," said Tom in an interview with the *Lab News*. "It's the beginning of a dialog to address [public and congressional] questions and to demonstrate that we are working together as a

(Continued on page 5)

What's what

I write this in the absence of my colleague Howard Kercheval, who's on a two-week vacation to the Caribbean. And not just any vacation, either. Howard, who's getting close to retirement and doesn't care who knows it, is a sailor. And he doesn't care who knows that, either. The double-breasted blue blazer with the epaulets and brass buttons, the silk ascot, and commodore's cap he usually wears to work are dead giveaways.

Anyhow, Howard just bought — sight unseen but by all accounts a gorgeous tub — a 37-foot blue water sailboat. He got a great deal on it, but it comes with a catch: The boat's way down south, somewhere near Aruba, and Howard's retirement home port will be Corpus Christi. So he and a couple of buddies are sailing the boat home. He's either having the time of his life right about now — or, if the weather's gone south — having very, very serious second thoughts.

By the way, Howard already owns a 26-foot sailboat, which he keeps up at Cochiti reservoir. So now that he's in command of a sailing fleet, I guess we'll have to stop calling him "Captain" and start calling him *Admiral* Kercheval.

* * *

I just came back from a whirlwind trip to Chicago to accept a bunch of awards from the folks at Ragan Communications on behalf of our *Lab News* team. Ragan is widely regarded as the nation's leader in helping corporate communicators do their jobs better. Every year at its big corporate communications conference (500+ attendees this year), Ragan recognizes the best of the best in employee communications. Their awards program is really the gold standard by which other such programs are measured. I say that because, well, because the *Lab News* was a big winner. Our publication won the award as the best nonprofit employee newspaper in the country. Ragan liked what we do. A lot. In their note accompanying the award, the judges said, "The *Lab News* simply gets the job done. It's comprehensive without weighing down its readers and entertaining without being irrelevant. In short, it's the complete package. . . . Sandia *Lab News* is the reason why internal communications exists."

The Ragan judges said a lot more very nice things about us, singling out for special praise *Admiral* Kercheval's *What's What* column, which they call "one of the best columns in internal communications. . . . It does what communicators everywhere want to do: It tells the truth with no holds barred, and speaks directly to what's on people's minds."

Speaking of singling out great work, three *Lab News* contributors won individual awards. Iris Aboytes won two awards of excellence (the top award), one for her light-hearted story on getting an ergonomic evaluation and one for her insightful and moving story about Sandian — and Ukrainian émigré — Zack Dorosh (2997). Randy Montoya won an award of excellence for his *Lab News* photo spread on President's Bush's visit last August. And John German won an honorable mention (the second highest award) for his news story about how Sandia's MicroHound sniffer is being used to great effect by front-line law enforcement personnel.

What goes unsaid is that, in the world of employee and corporate communications, we at the *Lab News* have it easy: we're telling stories, in words and pictures, about an extraordinary organization and extraordinary people doing extraordinary things.

Bill Murphy (505-845-0845, MS 0165, wtmurph@sandia.gov)

EMS announces first quarter Excellence Award winners

Winners in Sandia's quarterly Environmental Management Systems Excellence Awards program were: Rhonda Dukes (10243), Laura Rausch (Hensel Phelps Construction), Kory Fortune (Hensel Phelps Construction), David Gibney (HDR Inc.), Bill Hendrick (10824), Jack Mizner (10331), Sherron Hirdman (2733), Sylvia Saltzstein (2733), Max Saad (2733), MaryAnn Olascoaga (2719), and Robert Greigo (108441).

Awards were given in two categories, Recycling and Green Purchasing.

The nominations represented teams and individuals from across the Labs who contributed to the vision of Sandia's EMS.

The cumulative, environmentally beneficial results achieved by the nominees are impressive: 13,000 kg of hazardous waste and 63,000 kg of solid waste was avoided; more than 380 metric tons of material was recycled; $140,000 of environmentally preferred products was purchased; and $200,000 in costs was avoided.

About the EMS Excellence Awards

The Quarterly EMS Excellence Award recognizes exemplary advancements by individuals or teams that contribute to the vision of Sandia's EMS.

Each quarter the EMS core team recognizes individuals and teams who demonstrate environmental excellence in two specific categories.

Quarter	Dates	Categories
One	Jan. 1 to March 31	Green Purchasing AND Recycling
Two	April 1 to June 30	Procedures and Policy AND Awareness
Three	July 1 to Sept. 30	Risk Mitigation/Environmental Protection AND Waste Minimization
Four	Oct. 1 to Dec. 31	Water Conservation AND Energy Reduction

Visit the EMS website at http://ems.sandia.gov for more information about the awards and the nomination process. Submit your nominations by June 30 for the 2nd Quarter Award timeframe to oasaiz@sandia.gov.

Sandia LabNews

Sandia National Laboratories

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Sandia National Laboratories is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin company, for the US Department of Energy's National Nuclear Security Administration.

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Lab News fax 505/844-0645
Classified ads 505/844-4902

Published on alternate Fridays by Media Relations and Communications Dept. 3651, MS 0165

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Recent Patents

Stephen Gentry (5703), Mark W. Smith (5712), Jody Smith (5712), Christine Wehlburg, and Joseph Wehlburg: Staring 2-D Hadmard Transform Spectral Imager.

Doug Chinn (1723), Arnold Burger (Fisk University), and Ralph James (Brookhaven National Laboratory): Surface Treatment and Protection Method for Cadmium Zinc Telluride Crystals.

Alfredo Morales (8762) and Marcela Gonzales: Gray Scale X-Ray Mask.

Jamie Stamps (8235), Bob Crocker (8125), and Dan Yee (8125): Low Power Scalable Multchannel High Voltage Controller.

Laura Painton Swiler (1411) and Cynthia Phillips (1415): Method and Tool for Network Vulnerability Analysis.

Charles Morrow (6863): High Efficiency Brayton Cycles using LNG.

Christopher Cornelius (6245): Proton Exchange Membrane Materials for the Advancement of Direct Fuel-Cell Technology.

Kevin Horn (1343): Laser-Based Irradiation Apparatus and Methods for Monitoring the Dose-Rate Response of Semiconductor Devices.

Michael Sinclair (1824) and Maarten P. De Boer (1769): Long-Working Distance Incoherent Interference Microscope.

Retiree Grover Hughes tells it like it was

Design engineer was part of first Sandia contingent at Livermore

*Note: Retiree Grover Hughes, one of the first Sandians to work at the Livermore site, read Barry Schrader's recent story about the Labs' early days in California with some interest (*Lab News*, March 17). He liked the story, but felt there was more to tell, as he recounts in the following letter.*

2006 March 23

Historian, Sandia National Laboratory [sic]

Dear Historian:

My name is Grover Hughes; I am 80 years old, a retiree of the Labs (as of 1986 January) and wish to furnish you with some facts about the startup of our Livermore branch. The explanation as printed in a couple of histories of the Labs, as well as in the recent *Lab News* issue of 2006 March 17, volume 58, No. 6, does not give the whole story.

In early June of 1955, I was a mechanical design engineer working under Section Supervisor Bill Marsh and Division Supervisor Ralph Wilson. I do not remember our division number; it may possibly have been 1215.

Bob Henderson (a VP at that time, as I recall, but maybe director or other title), asked Ralph to send Bill and myself to Livermore to work with the Livermore UCal people on a new nuclear device. We went with the understanding that it was an open-ended project, and no one knew what would transpire in the future. We took Chick Farwell, a draftsman, so the original contingent consisted of: Ralph Wilson, division supervisor; Bill Marsh, section supervisor; Grover Hughes (me), design engineer; and Chick Farwell, draftsman.

As planned, Ralph stayed only a few days in order to introduce us around the lab and to get us started working with the Livermore Radiation Laboratory (LRL) people. We were housed at first in the El Rancho Motel on US 50, NE of town. After a week or three, we needed more drafting help, so we were joined by Sandians Woodrow "Woody" Hunt and Dan Alvino. All of us stayed in the motel for the first few weeks, during which time we were joined by our families, then we moved to other housing around and in town. "Town" back then was only about 7,000 people.

We all worked at LRL, on the second floor of a building which was across the street (west) from the swimming pool; I have no idea as to building numbers after all these years, nor if the swimming pool is still there — I very much doubt it. This building was on the north side of East Avenue, not the south, where Sandia was to establish the permanent SLL in 1956.

In about July or possibly August, Bob Henderson came out to tell us that it had been decided to continue our (that is, Albuquerque Sandia's) presence, indeed, to expand it, so that we would become an independent laboratory at Livermore (independent from LRL, not from Sandia, of course). He wanted those of us who were willing to stay on to do just that, but said that those of us who preferred not to stay permanently would of course be allowed to return to Albuquerque, after we had trained replacements to our (and management's) satisfaction.

In August, September, and October, additional SLA people arrived as replacements for those of us who chose to return (I was one of those), and we began introducing them to the job and to the LRL personnel with whom they would be working. I recall that Frank Murar and Gayle Cain were among those who came out in October, or maybe a bit earlier. I don't recall when my old friend and colleague Clif Selvage arrived — your article said that Clif "arrived in town six months ahead of the formal starting date," which would have made it about early September. Your article said that he arrived "along with another Sandian, Grover Hughes." As I'm trying to make clear, I arrived in early June, three months previously. I am sorry that I cannot recall Clif as ever living there.

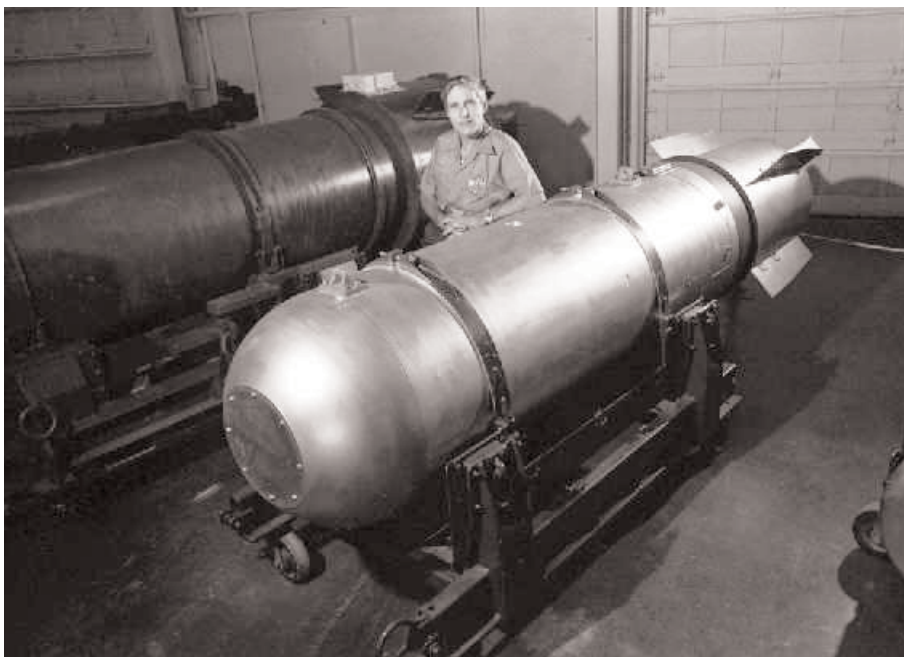
We certainly worked together on the W47/B47 project, as he was the electrical project engineer, and I was the mechanical project engineer.

My family and I left Livermore on October 22, 1955. Bill Marsh chose to remain as one of the permanent staff. Woody Hunt came home; I can't remember about the others — I think Dan and Chick came back, also, but don't quote me on that. Guess that's about it . . . Thanks for your interest, and keep up the good work at the *[Lab] News*!

Sincerely,

Grover W. Hughes, retiree ghughes@cei.net 116 Dub's Way Booneville AR 72927 (479) 675-9137

Sandia CaliforniaNews



GROVER HUGHES poses with the Mk 27. Necah Furman's *Sandia National Laboratories: The Postwar Decade* notes that "Los Alamos Laboratory's newly established competitor, the University of California Radiation Laboratory in Livermore (UCRL), also requested Sandia's assistance in 1953 with development of the high-yield thermonuclear bomb, designated the TX-22. Sandia provided some long-distance engineering for this program, and in so doing established a toehold as the ordnance support lab for UCRL. The unsuccessful TX-22 was superseded by the smaller Mk 27 . . . the first major program in which Sandia worked jointly with UCRL, [and] had applications for the Rascal, Matador, and Regulus missiles."

CRF engine researchers share 'best paper' award

HONORED — Paul Miles, left, and Lyle Pickett, right, pose in the lobby of the Combustion Research Facility. (Photo by Nancy Garcia)

Sandia researchers Paul Miles and Lyle Pickett (8362), with postdoctoral fellow Dae Choi (now at Hyundai Motors), and co-authors Dr. Sanghoon Kook and Professor Choongsik Bae of Korea Advanced Institute of Science and Technology (KAIST), received the Society of Automotive Engineers (SAE) Horning Award for the best paper in 2005.

SAE International

The paper covers research on advanced clean diesel combustion strategies conducted over the past two years at Sandia's Combustion Research Facility (CRF) in collaboration with visiting researchers from KAIST. The Horning Award is the premier international best paper award in the area of engine and fuels research and has been given annually by the SAE since 1939.

This is the sixth time Sandia's CRF researchers have won the award since Sandia began engine research in the mid-1970s, more than any other company, institution, or university working in the engine/fuels research field during that time period.

Bird flu

(Continued from page 1)

deadly 20th-century pandemic was the Spanish influenza of 1918-1919, which killed some 500,000 Americans and 21 million people worldwide.

But the emerging avian flu virus, technically the H5N1 variant, comes with many unknowns, says Larry (see "About the avian flu" at right). It might remain primarily in the bird population. It might combine with a common flu virus and begin to transmit among people. Mutations might render it more or less efficient (virulent) or more or less deadly (pathogenic). Worldwide precautions might blunt its spread. Global air travel might enhance its spread.

"There simply is too much we don't know to determine the likelihood of a pandemic," says Larry. But the consequences of one are too severe to ignore, he says.

Localized response

"The worry is that it could emerge in such a way that it quickly becomes pervasive across the country, or it could spread from several areas," he says. "A widespread emergence could limit city, state, and federal governments' collective abilities to respond," he says.

That is to say, in some scenarios community governments and individuals might need to implement federal recommendations and respond to local threats without direct federal support or intervention.

In fact, careful hygiene practices, social distancing, local school and workplace closures, quarantines, and selective administration of existing flu vaccines would likely be the prevalent tools in blunting the spread of a pandemic virus, Larry says.

What this tells us, he says, is now is a good time to develop and hone regional, institutional, family, and personal emergency plans with public health events in mind (see "Pandemic to-do list" at right).

National preparations

Sandia's preparations include business continuity planning for such possible flu-related events as travel restrictions, high employee absentee rates over a several-week period, imposed telecommuting, and, in a worst-case scenario, shutdown of all but the most essential Sandia systems and infrastructures for days or weeks.

Sandia is not alone. All US federal government agencies are required to develop pandemic influenza contingency plans. Most companies with a global presence have been planning for avian flu outbreaks since 1998, when the virus emerged in Asia. Many more companies are beginning their planning now.

Sandia's effort is coordinated with parallel efforts at both DOE and Lockheed Martin, Warren says.

"Planning for the spectrum of possibilities is a daunting task, but it is critical that Sandia has a continuity plan specific to public health threats," he says. "We need Sandians to make themselves aware of national readiness efforts and be ready for something other than business as usual should a serious threat emerge," he says.

Watch the *Lab News*, the online avian flu portal (http://www.sandia.gov/resources/emp-ret/flu/index.html), and other Sandia publications during the coming months for information about avian flu preparations and other related efforts, including being prepared to work from home, as well as common-sense hygiene tips that can help Sandians and their families stay healthy.

Why Sandia is preparing

Sandia has several good reasons to plan for an avian flu pandemic, says Dr. Larry Clevenger, director of Health, Benefits, and Employee Services Center 3300:

1. As an employer Sandia has an obligation to help protect employees, retirees, and their families, he says.

2. As a national security lab, Sandia must be able to continue to support its government, industry, and academic partners in a national crisis.

3. Sandia should be ready to complement local and regional responses to an avian flu outbreak in New Mexico, California, and other host communities.

4. And as a high-tech lab, Sandia has an unusual ability to talk about and focus on possible technical contributions. (More about this in a future *Lab News*.)

About the avian flu

The H5N1 variant, known informally as the avian flu or bird flu, so far has been contained primarily among bird populations in parts of Asia, Europe, the Middle East, and Africa. It has not acquired the ability to spread efficiently from human to human, nor has the virus been reported in the US among birds or humans.

Of the approximately 200 people known to have contracted the virus worldwide since 2003, about half have died. (For comparison, the 1918 Spanish flu had a 3 percent mortality rate.) The vast majority of those who contracted the virus, however, are believed to have contracted it through close contact with infected birds, not from other people.

US federal government responses are tied to World Health Organization pandemic alert levels, which are in turn tied to current avian flu-related developments around the world.

Sandia's avian flu portal (www.sandia.gov/resources/emp-ret/flu/index.html), now available on Sandia's external web, provides the latest avian flu information from authoritative sources.

Pandemic to-do list

Sandia employees, contractors, and retirees are urged to prepare in the following ways:

1. **Learn about the avian flu.** The avian flu portal now available on Sandia's external web (http://www.sandia.gov/resources/emp-ret/flu/index.html) contains the latest avian flu information from authoritative sources. The portal will become the primary source of Sandia news and information for employees in a pandemic-related crisis.

2. **Understand how a public health event might affect your work.** As a Labs-wide plan develops, the Sandia avian flu portal will include continually updated information useful for organizational and individual business continuity planning. Managers also will receive instructions for conducting a public health threat organizational self-assessment.

3. **Find out how you and your family can prepare.** A personal readiness plan specific to a public health crisis is available at www.PandemicFlu.gov (click on Individual Planning).

Desalination

(Continued from page 1)

Tampa. It is also commonplace in other parts of the world. Except for the Middle East, most desalination is done through reverse osmosis.

Pat says 43 research areas have been tentatively identified and some projects are already underway, jumpstarted with $2 million made available for the preliminary research through a matching grant from the California Department of Water Resources. California provided $1 million and members of the Joint Water Reuse and Desalination Task Force each contributed $250,000.

For more on Sandia's water research, see the sidebars on the next page.

Another $4 million in fiscal years 2004, 2005, and 2006 through federal Energy and Water Development Appropriations bills secured by Sen. Domenici has also funded desalination research at Sandia.

"The task force will be the entity deciding which of the 45 projects get to the top of the research pile," Pat says. "As more money is made available, universities, research groups, national labs, and private companies will bid on projects."

Among the 43 research areas included in Roadmap 2 will be:

• Membrane technologies (mainly reverse osmosis process) that desalinate and purify water by pushing it through a semipermeable membrane that removes contaminants.

• Alternative technologies that take advantage of nontraditional methods.

• Concentrate management technologies that consider the disposal, volumetric reduction, and beneficial use of the mineral byproducts of desalination.

• Reuse/recycling technologies that look at ways membrane and alternative technologies must be designed to handle increased contaminant loads.

Much of the research is expected to be conducted at the soon-to-be-completed Tularosa Basin National Desalination Research Facility in Alamogordo, N.M.

Sandia's long-range R&D seeks novel solutions

Solving the tough issues of desalination may take solutions that don't exist — yet.

That's where Tom Mayer (6118) comes in. He leads a long-range R&D effort that takes fledgling ideas and helps them grow into rigorous research projects. Some pan out, others don't.

Tom calls it high-risk/high-reward research.

"We recognize some of the research may provide just the answers we are looking for," Tom says. "But we may not see the results for five or ten years."

Tom has the job of identifying researchers with knowledge in different fields and matching them up with new types of research that may lead to better desalination methods. Most people doing research on projects in the long-range R&D program never before worked in water treatment.

One example of bringing together people from different fields — which Tom says was done before he took the job — was teaming Jeff Brinker (1002), a chemist who works at the nanoscale, and Susan Rempe (8333), who does computer modeling, to try to make a high-efficiency membrane for the reverse osmosis process that mimics the process in biological cells.

Susan's job is to do modeling to understand the function of the biological system and identify necessary functions that a synthetic membrane would need. Jeff's job is to make a synthetic structure that does those functions.

If they succeed, Tom says, they may have a membrane that works at least 10 times better than commercial membranes.

In another instance, Tom tapped Chris Cornelius, who has been developing membranes for hydrogen fuel cells, to build a better electrodialysis membrane. (Electrodialysis removes salts or ions from water with an electric field and special ion-exchange membranes.) Also working with Chris are Michael Hibbs and Cy Fujimoto (both 6245).

"Chris' work is farther along that Susan and Jeff's," Tom says. "Electrodialysis is well-known but not popular in the US. But there are real possibilities for its use. If we develop a better membrane, it may make the technology more attractive." — *Chris Burroughs*

GNEP

(Continued from page 1)

team on this."

Sen. Pete Domenici, R-N.M., and Deputy Energy Secretary Clay Sell both praised the potential the national laboratory complex brings to nuclear energy research. "DOE and its national laboratories exist to develop technology options for our most challenging national problems," Domenici said. "US energy security is one of our most significant challenges."

"GNEP demonstrates the enormous role advanced nuclear science and technology can play in making the world a better, cleaner, safer place to live," said Sell. "The national labs are charged with realizing this vision."

GNEP (see *Lab News*, March 17, 2006) grew out of a larger plan by the Bush administration, recognizing that there is no single "silver bullet" to resolve US energy problems. Instead, a number of energy options — including nuclear power — need to be explored.

Bush elaborated on his plans for nuclear power in his 2006 State of the Union address, announcing the Advanced Energy Initiative. GNEP is one element of the initiative. It calls for:

• Advanced recycling of spent nuclear fuel to extract more energy content and cut waste byproducts, and

• A partnership with other nations to assure nuclear fuel supplies while reducing the threat of nuclear weapon proliferation.

The May 2 assembly of directors (only three were unable to attend and sent stand-ins) gave the leadership group opportunities to present their case to a key group of congressional staff members and the news media, and to conduct a series of other meetings.

Tom, introduced by Sen. Larry Craig, R-Idaho, moderated the congressional staff forum. Tom told the group, "Moving forward with the research and technology development proposed by GNEP is of great importance to all Americans. The partnership is a bold new initiative by the government to put the US in a leadership role with the future of nuclear power."

GNEP allows the US to address the primary issues of energy and energy supply, an improved climate and environment from energy production without harmful greenhouse gas emissions, and nonproliferation concerns about better control of nuclear materials, Tom said.

LABS DIRECTOR Tom Hunter, fifth from left, was among nine national laboratory directors who briefed members of the news media on the opportunities and challenges of nuclear energy. Sen. Pete Domenici, fifth from right, participated in the panel discussion. Earlier, the directors briefed about 30 congressional staff members.

The effort will begin with preparation of a technology roadmap to determine what needs to be done, followed by a process to match the skills and capabilities of universities, industry, and the national laboratories against the roadmap. At the start of the road, Congress is already evaluating a $250 million FY07 budget proposal for nuclear power research that would lead to technology demonstrations in FY08 in the areas of:

• Separating high-energy elements of used nuclear fuel from wastes for recycling without separating pure plutonium,

• Demonstrating proliferation-resistant fuel recycling and fabrication technologies for future reactors using chemical processing, sensors, detectors, and monitoring approaches, and

• Developing an advanced burner test reactor (about one-tenth the size of a current nuclear plant) to convert transuranic elements used in nuclear fuel into shorter-lived isotopes while releasing energy to produce electricity.

Commercial-scale production of power with this newly demonstrated "closed nuclear fuel cycle" would be the final step, a decade or more away.

Action now

The lab directors, who have worked for a couple of years to support DOE in this initiative, recognize that although GNEP is long-range and would have impact largely after a couple of decades, it should be started now. "We need to make this long-term commitment," said Tom.

In what he called "spirited" questioning from congressional staff, Tom and other directors emphasized that GNEP is consistent with plans to move forward with the Yucca Mountain repository licensing and to work toward the addition of more light-water or advanced-generation reactors to the current inventory. "It does not in any way detract from those two things," he said.

Los Alamos National Laboratory Director Robert Kuckuck and Argonne National Laboratory Director Bob Rosner also presented with Tom at the briefing.

"The audience was very engaged, they asked a lot of questions . . .We ran out of time before they ran out of questions," said Tom. Questions focused on priorities and balance of current nuclear programs as opposed to future concepts, about the waste situation with Yucca Mountain, and about the interest of other countries in participating. (India recently became the first nation to agree to join the partnership.)

"Each of the committees or delegations there had some very informed, significant issues that they wanted to understand better. We see this as the beginning of a dialog," said Tom.

A news conference later in the day, hosted by Idaho National Laboratory Director John Grossenbacher, sounded many of the same themes. Sen. Domenici and Rep. Judy Biggert, R-Ill., opened with comments, followed by Deputy Secretary Sell and Dennis Spurgeon, DOE Assistant Secretary for Nuclear Energy.

"In the short term our role now is to maintain the discussions so that the Congress gets its questions answered sufficiently to deal with the president's proposal in the budget," Tom said.

Others participating in the day's events included directors or representatives from Oak Ridge, Savannah River, Pacific Northwest, Lawrence Livermore, and Brookhaven laboratories.

Labs water research looks at all aspects of multifaceted issue

Byproduct cleanup

Even though there is more water to be had in the form of brackish water throughout the world, it will come at a price because of cleanup costs, says Richard Kottenstette (6118), who heads up the Jumpstart R&D portion of Sandia's Advanced Concepts Desalination program. His goal is to identify and pursue technologies nearly ready for commercialization that can tackle this problem.

The problem of cleanup — what to do with the concentrate resulting from reverse osmosis — is at the top of his list. Concentrate is the salty residual liquid byproduct of desalination.

On the coasts the solution is simple — return the salt and minerals to the ocean. But inland, getting rid of the residual becomes problematic.

Richard and his team are involved in projects that deal with this, as well as related issues. Some include:

• A reverse osmosis project with the University of South Carolina that is investigating better mineral recovery — recovering minerals and leaving less or no salty water behind. The minerals, which have monetary value, can be sold. This will be piloted next year at the Tularosa Basin National Desalination Research Facility in Alamogordo, N.M.

• A method to reuse water that comes from sewage so it is potable. Sandia recently completed a pilot project at the Rio Rancho wastewater treatment plant. "If you use it twice, you double its value," Richard says. Treated wastewater is typically used to water parks and golf courses, but there is a possibility it could be made as fresh as if it came out of an aquifer. The phosphorous from the waste could be turned into fertilizer.

• A method of taking mineral waste after reverse osmosis and putting it into evaporation ponds. From there the waste could be put into a landfill, placed over a liner that could self-heal if it were breached. Sandia is working with a New Mexico State University graduate student on this project as well as with the Texas Bureau of Economic Geology. *— Chris Burroughs*

Commercialization

The next step after developing a better desalination method is commercialization.

That responsibility falls to Sue Collins (6118), who works closely with Sandia's licensing department.

"Our customers and advocates have said repeatedly that the success of commercialization efforts will be measured in gallons of new water produced," Sue says. "That means accelerating the lab-scale success to pilot-scale and then to the manufacturer and end-user."

The advantage of having a desalination roadmap, she says, is that it gives her the opportunity to work closely with the end-user and meet their needs.

The successes of the previous year have attracted local advocates to the commercialization efforts. For example, the City of Alamogordo — with funding from the State of New Mexico — is doing complementary testing on a reverse osmosis project at the Tularosa Basin facility. The Alamogordo tests will confirm the economic potential of the mineral byproducts resulting from the Sandia tests on the system.

Also, the State of New Mexico is matching Sandia-funded work at New Mexico Tech. Last year, researchers from the university and Sandia identified enzyme treatments that remove slimy biological buildup from reverse osmosis membranes. These natural cleaners could replace the harsh acid and caustic cleaners used today.

This year Sandia will fund studies at Sandia and New Mexico Tech to determine what small-scale processes can cause the best enzyme treatments. The state will fund New Mexico Tech to perform large-scale tests of enzyme treatment using a typical reverse osmosis unit with produced water from the San Juan area.

"End-user interest is growing steadily and that is important to our work with the manufacturing community," Sue says. *— Chris Burroughs*

Sandia's student intern program helps Tsali Cross earn his PhD in engineering

By Iris Aboytes

In mid March, Virginia Stroud gave her son Tsali Cross a beautiful first-edition Pendleton blanket that she designed for him. In many American Indian tribes a blanket is presented to honor people. It is reserved for recognition of a special event or significant accomplishments. Tsali received his blanket in honor of his newly granted PhD in engineering.

PROUD MOM — Virginia Stroud presents her son Tsali Cross a Pendleton blanket she designed for him in recognition of his newly granted PhD in engineering.

In 2003 Tsali's advisor from the University of Colorado at Boulder, Professor Rishi Raj, an internationally known ceramist, visited the Materials Science and Engineering Center (1800) at Sandia. He discussed the feasibility of his graduate student Tsali Cross pursuing graduate research in Sandia's Microsystems Materials Dept. 1824.

A project on the friction and wear properties of polymer-derived ceramics would be mutually beneficial to Sandia and CU-Boulder. Since the proposed research also had direct applications to MESA projects, MESA Institute Manager Regan Stinnett (6439) provided partial support to Tsali's research by awarding him a MESA Institute fellowship.

The MESA Institute is a university partnership program for microsystems. One of MESA's missions is to foster relationships with leading universities and professors that will leverage Sandia work, provide new opportunities to the students and professors while also introducing new ideas to Sandia, and create a pipeline of highly trained, potential new hires for Sandia. The MESA Institute sponsors about 50 university students from throughout the US each year.

Tsali was mentored at Sandia by Somuri Prasad (1824), who is now also an adjunct professor at CU-Boulder. Somuri supported him through his thesis defense in March 2006. "Tsali came to our group with a mechanical engineering background, and at Sandia he quickly developed interdisciplinary skills that transformed him into a materials engineer and a tribologist," says Prasad. "He enjoyed being challenged and applied himself to any given task very effectively."

While at Sandia Tsali was an active participant in the American Indian Outreach Committee, participating in the Dream Catcher Science Program. There he led a class called the "Hole-in-One Competition." The objective was for the students to make competing designs of a golf course out of common, everyday materials, and each design competed against each other. "He was a hit with the students and left a lasting impression on the students' parents," says American Indian Outreach Committee Chairwoman Marie Brown (3553).

Tsali was born in Oklahoma and grew up in Durango, Colo., with his sister and mother, a professional American Indian artist. A large collection of his mother's artwork was recently included in the Smithsonian's archives of living artists. "As an artist I touch the human chord that erases the multicultural boundaries and ask the viewer to look for the familiar and not the differences of humanity," says Virginia.

Tsali recently began working for Intel in Santa Clara, Calif. "It was wonderful working at Sandia," says Tsali. "Sandia has so many experts in addition to its world-class facilities. At Sandia I worked on the study of friction, wear, and lubrication of materials. I got to develop new materials for microsystem technologies. I also designed, analyzed, and tested critical/complex materials."

"Tsali serves as a great example of how Sandia can work with universities and their students to the benefit of all," says Jonathan Custer, manager of the Microsystems Materials Department. "Tsali earned a PhD and simultaneously experienced firsthand how professional technical organizations work. Sandia got a hands-on evaluation of a new technology, and CU-Boulder got stronger ties to Sandia, including the services of Prasad as an adjunct professor."

VP Frank Figueroa (10000), Sandia campus executive for CU-Boulder, supported Sandia's actions and provided encouragement to Tsali. "Tsali is a bright and caring young man," says Figueroa. "It was a privilege to have him with us even for a little while, and I hope someday we might convince him to come back on a permanent basis. He gives me great hope for the future of our country."

STAR program participant Bennett Grill nets all-expenses-paid trip to Indianapolis

By Iris Aboytes

Bennett Grill, a participant in Sandia's STAR program, won an all-expenses-paid trip to Indianapolis May 7-14 for competition against 1,400 students from around the world. He took the top prize in the regional science fair competition. Bennett is a senior at Rio Rancho High School.

The STAR program is a research-based, non-residential mentorship program funded by Lockheed Martin Corporation and administered and designed by Sandia. Its goal is to provide highly motivated, high-performing high school students an opportunity to work closely with world-class engineers and scientists in a research-based summer program. The program enables students to gain real-world work experience in a technical field.

After his participation in the STAR program, Bennett spent another semester participating in Sandia's internship program, where he studied fundamental principles of electrochemistry using electrochemical and statistical analysis.

While at Sandia he worked with William Yelton of Photonic Microsystems Technology Dept. 1713. "He focused on understanding fundamental concepts.

At lunch, instead of spending time with students his age, he would open discussion on physics, chemistry, and engineering projects with many staff members in the area."

The title of the research paper Bennett wrote at Sandia is "Limitation of Cottrell's equation: Plotting electromechanical diffusion coefficients of potassium ferricyanide and potassium ferrocyanide as functions of temperature and concentration."

"His experience here exposed him to areas most students would not get until grad school," says William. "The program works."

Feedback

Q: *This morning (4/5/06) in the parking lot of Building 701 I found myself in a very strange situation. I saw a white truck with government plates sitting in the lane between parked vehicles, and ahead of me (and it) a personal vehicle was pulling out of a parking space. I took that space, and the driver got out of his car and told me that I had to move my car, because he had been planning to park the government vehicle in the space. He said that he was a Sandian, would not give me his name, and threatened to call Security if I did not move my car. I told him that I thought the rule was that these spaces were for private vehicles, and after some discussion (very loud on his part) he said he would put his private vehicle back in the space, but he still demanded that I move my car. I did so, but I think the practice of swapping government and private vehicles back and forth to save parking spaces is inappropriate (and I had no reason to think that was what he was doing when I pulled into the space). Was he correct in demanding that I move my car? (And "demand" is not too strong a word.)*

A: It is very unfortunate that this incident was addressed in what appears to be a very aggressive and confrontational manner. Aggressive behavior is unacceptable and if you felt threatened, please report the incident to your manager right away. You and your manager should talk over the situation and report it to the Workplace Violence Team Leader. Sandia has a strict policy on workplace violence: CPR300.5.4 —Workplace Violence Prevention Program.

As far as moving your vehicle is concerned, no, you didn't have to move it. However, you did the right thing by moving it to avoid an escalation of the situation. This type of practice is inappropriate. The Sandia Traffic Safety Committee will send out a communication to all members of the workforce, via SDN, that this type of practice is unacceptable and inappropriate. We are still working on the citation program and expect to have it completed in the near future.

— Darrell Fong, Chairman
Traffic Safety Committee

Weapon Intern Program prepares future stockpile stewards

By Stephanie Holinka

Vern Willan thinks a lot about change. These days, there's a lot to think about. High-profile programs like the Reliable Replacement Warhead Program will mean major changes for those who work with existing nuclear weapons.

As manager of Weapon Engineering Professional Development Dept. 2916, Vern manages the Weapon Intern Program, which prepares future stockpile stewards for management of the nation's nuclear stockpile. The program is accepting applications for new Weapon Intern participants for next year's program.

The NNSA's Strategic Vision document, released in February, outlines a future nuclear weapons complex that is lean, flexible, and able to design robust weapons that could remain in service for extended periods of time. This places incredible demands on future stockpile stewards. In addition to maintaining the current stockpile, they may someday repurpose existing weapons to suit a changing world while working toward a future when the complex must build and field new weapons.

WEAPON INTERN PROGRAM participants, from left, Don Gross, Defense Threat Reduction Agency; Ernie Wilson, US Air Force Nuclear Weapons Counter-Proliferation Agency; Maj. Glenn Hillis, US Air Force; Monica Chavez, DOE/NNSA; and Abe Sego, WR Mechanical Design Dept. 2997; examine a B61 weapon shape. This year's Weapon Intern class has 21 students. In addition to 11 Sandians, the program includes students from the US Air Force, DTRA, NNSA, and the Kansas City Plant. (Photo by Randy Montoya)

Responding to ever-changing threats

Sandia's Weapon Intern Program partners the Labs' newest stockpile stewards with experienced Sandia weaponeers. The program trains those who must work with existing weapons systems to respond to the ever-changing threats to national security while maintaining the highest standards for health, safety, and protection of the environment. That means learning from the past while anticipating the future needs of the nation's defense services. Vern says the program allows stewards to "build networks within Sandia that they will use in their future work," something not always easy to do in classified environments.

"It used to take an average of four to eight years to field new weapons. That wouldn't fly in today's world. The world is different. The threats to the safety and security of this nation are different . . ."

Brien Bopp, program manager, Weapon Intern Program

Brien Bopp, program manager for the Weapon Intern Program (WIP), says participants in the program work together to envision a future responsive infrastructure. "We must plan for the future we think we see," he says. "Our infrastructure must be flexible enough to make significant changes on short notice."

Those changes include discovering ways to shorten the timeline from weapon design to weapon fielding. "It used to take an average of four to eight years to field new weapons," says Brien. "That wouldn't fly in today's world. The world is different. The threats to the safety and security of this nation are different, but because we don't now develop new weapons systems, we must rely on Cold War weapons to defend us in a post-Cold War world."

One of the most important areas the WIP curriculum now covers is weapons effects. In the past, engineers used nuclear testing to evaluate the civil or military effects of nuclear blasts. This gave engineers and scientists a real-world view. But because the US no longer does all-up tests of its nuclear weapons, it must rely exclusively on subcritical experiments and computer modeling to guarantee the effectiveness and safety of the enduring stockpile.

Because there are no plans to resume nuclear testing, future additions or changes to the stockpile must be made without nuclear testing. Those who come into the nuclear weapons complex today have never seen a nuclear detonation firsthand. That leaves an experience gap that must be filled.

That gap is, in part, being filled through specialized coursework such as the new Weapons Effects Class. The class was developed and is taught by Harold Walling, a former Sandian and current professor in New Mexico Tech's mechanical engineering department. The class provides detailed information about nuclear weapon effects at a classified level.

The Weapon Intern Program is accepting applicants for its Fall 2006 program, but all Weapon Intern Program classes are open to anyone in the nuclear weapons complex with a Q clearance and a need-to-know. The calendar is available in the Weapon Intern Program's section of Dept. 2916's website.

About Sandia's Weapon Intern Program

Note: The information here is adapted from the Weapon Intern Program website.

Sandia's Weapon Intern Program was created collaboratively by a broad range of experts from Sandia and the greater nuclear weapons community. WIP began in 1998 as an effort to accelerate the transfer of critical weapons knowledge from retiring scientists to the next generation of stockpile stewards. The program is continually being updated and modified based on input from members of Sandia's nuclear weapons community.

WIP students acquire a broad understanding of stockpile stewardship by studying both the history and current mission of the nuclear weapons program. The Weapon Intern Program prepares participants for critical positions and leadership roles in the nuclear weapons program. The program aims to make students aware of the partnerships required to deliver a weapons product and the complexity associated with weapons processes, design considerations, and tradeoffs in weapons design. It endeavors to ensure continuity of the knowledge and understanding of the nuclear weapons program by the participating engineers and scientists.

WIP uses a blended learning approach; project assignments, mentors, and site visits to nuclear weapons facilities are combined with course work and classroom instruction that bolsters learning processes. In addition, the program allows research time to investigate nuclear weapons issues using Sandia's resources as well as DoD resources. Over a one-year period, nuclear weapons experts teach science-based stockpile stewardship tools, processes, and techniques used to keep the stockpile safe, secure, and reliable in the absence of underground nuclear testing. WIP participants acquire a broad understanding of the nuclear weapons program and gain the necessary skills to assume stewardship of the enduring stockpile.

College credit: Transfer WIP classes for credit towards a master's degree

The Weapon Intern Program is structured such that up to nine (9) elective credit hours are transferable to New Mexico Institute of Mining and Technology (NM Tech) that can be applied towards a master of science degree in engineering mechanics. NM Tech degree enrollment requirements can be found on the NM Tech website, www.nmt.edu. Enrollment in NM Tech for degree or credit hours is optional.

Seminar series

Two seminar series, Science Foundations and Sandia Principles, are part of the curricula. The Science Foundations series features invited Sandia speakers discussing the latest science projects and research and development initiatives, such as the winners of the R&D 100 Award. The Sandia Principles series features active and retired weaponeers who speak on their experiences, lessons learned, the Sandia culture that developed the weapons, or technical summaries that span a career to include rules of thumb and knowledge developed through experience.

DHS turns to Sandia for tech transfer help

By Mike Janes

When the Department of Homeland Security (DHS) realized at its launch that it needed to establish a consistent and productive technology transfer mechanism, it sought guidance from the laboratory with a track record.

Whether one measures intellectual property generation, numbers of CRADAs, revenue generated through business partnerships, or numbers of licenses, DHS found that Sandia is a top performer among the national laboratories.

TECH TRANSFER TEAM, from left to right, Ellen Stechel, Denise Koker, and Lennie Klebanoff are among those Sandia staff members who have provided ideas and alternatives to the Department of Homeland Security to help that agency create appropriate processes and mechanisms for achieving technology transfer.

Specific examples bolster Sandia's reputation of excellence in partnerships with industry: the Labs' longstanding relationships with Goodyear and Intel; its role in establishing and delivering on the largest CRADA ever (the Extreme Ultraviolet Lithography CRADA with a microelectronics consortium); the extensive licensing of risk assessment methodologies that enable public utilities to assess vulnerabilities and protect critical infrastructures; and the commercialization and deployment of various homeland security technologies.

Now, nearly two years after DHS first asked Sandia for assistance, the Labs is playing an ever-greater hands-on role in helping shape the department's commercialization planning and technology transition efforts, particularly as they relate to federal laboratories.

The aim is to get homeland security technologies developed by the DOE labs deployed in products supplied by industry and available to end users who need them the most, while at the same time ensuring that technology transition strategies are developed at the outset when new technologies are conceived.

"Our goal has been to provide information analysis, ideas, and alternatives to DHS," says Denise Koker (8529), business development manager at Sandia's California site and the commercialization lead for the Labs' Homeland Security and Defense (HSD) strategic management unit. "They can then use that information to create appropriate processes and mechanisms for achieving technology transfer."

Adds Ellen Stechel (6220), who is assigned to the DHS Office of Research and Development after being rehired by Sandia after working in industry for nearly seven years: "In the past, the labs and their funding partners may have been quick to develop a technology without considering the technology lifecycle, which needs to take into account whether there is a customer, or whether it might eventually run into issues of affordability, reliability, manufacturability, usability, or serviceability. That's where technology transition strategy and planning comes in."

DHS, says Denise, has an unusually challenging responsibility to not only direct research and development through its Science and Technology directorate, but also to ensure that products from specific technologies are rapidly available for deployment to emergency responders, border agents, airport personnel, and other end users.

Whereas the federal government creates a market through large procurements, industry is more likely to adopt new technologies that meet the product requirements. However, for many products with homeland security applications, the federal government is not the purchaser or the end user.

"The Department of Defense is often its own consumer of products adopting R&D it funded," Denise points out. "DHS, on the other hand, has to worry about promoting adoption by manufacturers and end users after developing the technologies. It's of vital importance but it's an additional burden for them, and one with which we are lending a helping hand."

Commercialization is an element of a broader effort in which Sandia is helping DHS's Office of Research and Development (ORD) establish technology transition processes for the lifecycle of technology development, from basic research through deployment. Ellen is assigned to DHS/ORD, working within the Office of Science and Technology to provide options for making technology transition planning integral to all program execution plans.

"Commercialization should not be a disconnected task or an afterthought, but rather part of an overall transition strategy that is consistently wrapped into to program development from the start," says Ellen.

To this end, DHS has funded Sandia to aid them with several tasks. First, beginning last June, Jill Micheau (8529) went on temporary assignment to DHS, which Denise calls a "critical effort that put her directly on the front lines." She and Denise conducted a benchmarking study, now documented in a report to DHS, comparing how other agencies conduct technology transfer and analyzing how alternative mechanisms and solutions might meet DHS needs.

DHS will soon be making decisions and implementing various technology transfer policies and processes. Ellen is serving as a consultant to a Science and Technology-wide team that will be finalizing technology transition guides, assessment tools, and policies and procedures.

Sandia CaliforniaNews

Sandia's BROOM among technologies to serve as pilot project

The Sandia DHS liaison team has been immersed in aiding DHS with exercising tech transfer processes and mechanisms by carrying out specific commercialization projects. In November, Denise Koker (8529) and Jill Micheau (8529) helped DHS develop the broad strategy for the pilot program, which focuses on three key homeland security technologies important to the department.

Denise and Jill's contributions included a detailed process for selecting the most appropriate technologies, a step-by-step commercialization planning model to be used throughout the pilot project, and the identification of clear objectives and outcomes.

"Our goal has been to provide information analysis, ideas, and alternatives to DHS. They can then use that information to create appropriate processes and mechanisms for achieving technology transfer."

— Denise Koker

Jill's briefings to various DHS executives on the plan have been well received. "We're anxious to test new paths to commercialization, which may include the use of new contract types, penetrating new markets, and working across several federal agencies to leverage investments and meet multiple goals," she says.

One of the three technologies selected by DHS for the Commercialization Pilot Program was Sandia's own BROOM (Building Restoration Operations Optimization Model), with Sandia's Jane Ann Lamph (8750) now leading the commercialization effort. (Lennie Klebanoff had been the key BROOM technology transition figure until returning to his technical position in Dept. 8757.) Jill, meanwhile, is taking on the other two pilots — Idaho Explosive Detection System, and a foot-and-mouth disease vaccine from the USDA being tested and further developed at DHS's Plum Island Animal Disease Center.

JANE ANN LAMPH (8750) now leads the commercialization effort of the BROOM technology, taking over from Lennie Klebanoff (8757).

Denise says commercialization plans for the three pilot technologies should be completed by May. Development of the plans involves extensive interaction with stakeholder agencies, end users, and potential industry partners. Therefore, some implementation is conducted in parallel with development and refinement of plans. Transition to DHS for continued implementation should be completed by June.

For her part, Jane Ann is excited about the challenges ahead with BROOM's commercialization. At a recent Bio-Restoration Technology Demonstration event held at San Francisco International Airport, Sandians met potential BROOM user representatives from the Transportation Security Administration (TSA), Los Angeles International Airport, and Bay Area Rapid Transit. Jane Ann says she hopes to capitalize on the relationships that were forged.

"Commercialization is a 'contact sport' that, by definition, involves a lot of briefings, demonstrations, and a great deal of personal contact with potential business partners," she says. "Hopefully, that plays into my strengths."

Denise and Ellen Stechel agree that the long-range goal is to contribute to making technology transition second nature for DHS/Science & Technology whenever it conceives of new projects and Technology needs.

"It needs to be a normal, funded component of the way DHS conducts business," Denise says, "rather than an afterthought."

"The challenge for a technology transition manager or champion is to convey to DHS program managers and their principal investigators in the field an understanding of the business and operational issues relevant to technology development and implementation to complement what they already well understand about the technical issues," Ellen adds.

Betty Boop hits the gym with the Betty Boomers

By Iris Aboytes

You know something is wrong when you think you're in good shape and an older man with an oxygen tank can pedal a bike better than you.

Having done step aerobics at Sandia for several years, I thought I was in pretty good shape but decided it was time to try something different. Save my knees, firm up the bod? An overhaul? Yes, I need it all. So I hit the gym.

BOOP'S POOPED — Iris Aboytes works out on one of the exercise machines available at the gym.

(Photo by Adri Aboytes-Lund)

Did you know about target heart rates? To burn fat you need to be at a particular level. Cardio requires a different one. Cross training works best. What that means is it's best to vary your exercise regimen. Step aerobics, walking, and playing soccer all use different muscles and they all need to be worked.

Theresa, the exercise specialist at the gym, asked me, "What would you like to get out of your workout?"

I said: "I'd like to look like Angelina Jolie minus the pregnancy and have the energy of a five-year-old. Do you think I've come to the right place? . . . OK, OK, I'd like it if my triceps were firm instead of limp appendages and I'd like my quads to be long and lean instead of being all bunched up looking for a place to belong."

"That I can help with," she says. "Follow me."

I see recumbent bikes, treadmills, elliptical machines (they look like aerobics machines in a Star Wars movie — intimidating to me. Holding on to the handles, you swing as you are in suspension on the paws.) Try to imagine my coordination in trying to get on and stay on one. I decide I don't need whatever it is willing to afford me.

One of the most popular pieces of equipment is like a stepper but you are sitting down stepping and moving your arms. It doesn't offer enough excitement for me.

There are machines for the front of my arms, the back of my arms, the small of my back, my quads, and my shoulders. The variety is overwhelming. If you are ever given a choice, do not go on the machine that works the front and back of your legs. You might make the same mistake I did and work the wrong parts. Also the machine that is for hip abductors does not work instantly. I'm still working on the assumption that they will eventually be abducted (the hips, not the machines). I'll keep you posted.

I hit the recumbent bike. I'm in trouble! Which program do I want: fat burning, strengthening, or cardio, for how long, and how hard do I want to work? While I am figuring this out (I don't have my glasses on) I notice a gentlemen sitting on the bike next to me. He pushes buttons, sits back and listens to his iPod. Before I even get started he is cycling like a pro. Did I mention he was breathing with the aid of an oxygen tank? (His knowledge of the machines, his determination, and his physical fitness make him my role model. I want to have his energy. If he can do it, so can I.)

My workouts are great. I do weight-bearing on the treadmill and cardio on the recumbent bike. I use all the weight machines for muscle building, strengthening, and flexibility.

There are some side effects. Be prepared to get backtalk from your quads ("Don't even think of going in there") and your triceps and biceps ("Hold your own water bottle"). I have not decided what course of action to take with them. I am open to suggestions.

But guess what? I'm not shrinking. I can touch my toes. I giggle with the best of them, and I feel like I could maybe try that elliptical machine.

What about my heart? I imagine it beating powerfully as it keeps the cholesterol away from my arteries. Oh, I almost forgot, I don't have the energy of a five-year old, but I have energy to run through sprinklers and create my own rainbows. I would like to climb an apple tree, but there isn't one around.

Sandia's Fitness Classes

Sandia Health, Benefits, and Employee Services (HBE) provides a variety of classes for participants of all levels. The main goal of the physical fitness classes is to help Sandians safely start and maintain a fitness regimen.

Approximately 20 classes are held each week. Classes are held before and after work hours and during the lunch hour for convenience at the workplace. A variety of class formats are offered to both encourage the beginning exercise participant and challenge existing participants.

On the average 860 participant transactions are seen through Preventitive Health group exercise classes per month. The qualified HBE staff and exercise physiologists encourage employees to use local fitness facilities to augment what they are doing on site. To find about Sandia classes and gym discounts at local fitness facilities go to http://hbeupdate.custhelp.com. For information about all of HBE available Health and Fitness classes go to http://hbeupdate.custhelp.com/cgi-bin/hbeupdate.cfg/php/enduser/doc_serve.php?2=lrcblog

Employee Health and Fitness Day

Check out Dr. Clevenger's Blog as he addresses Health and the High Cost of Keeping It: http://hbeupdate.custhelp.com/cgi-bin/hbeupdate.cfg/php/enduser/doc_serve.php?2=lrcblog

May 17 6:00 am - 8:00 am Hardin Field	**Bike to Work** - Stop by the park for a healthy refreshment, snacks, and bike commuter information.
May 17 11:00 am - 1:00 pm Hardin Field and Bldg. 956 Security Track	**Rockport Walk** - Have you thought about beginning an exercise program but would like a more definitive way of assessing your progress? Are you currently exercising and would like a measure of how fit you are? The Preventive Health fitness team will be testing individuals and calculating max VO2, a measure of cardio respiratory, muscular endurance, and maximum aerobic capacity. All you will need to do is wear walking shoes and walk one mile at your fastest pace. After completing the mile, your heart rate will be measured and a max VO2 measurement will be calculated and sent to you in your online Health Risk Assessment. If you request we will also create an individualized walking program for you based on your current fitness level.

Sandia Serves volunteers honored for giving of their time

By Iris Aboytes

Sandia Serves volunteers were honored last week for giving generously of their time. Marie Steele (10761) received the Shining Eagle Award, David Gallegos (5533) received the Goodness Award, and retiree Gerald Quinlan received the retiree Shining Eagle Award. An additional 37 Sandians were honored for volunteering at least 100 hours with one nonprofit organization.

MY GOODNESS — Bruce Fetzer, Center 3600 Director, presents the Goodness Award to David Gallegos as VP Kim Adams looks on.

Marie received the Shining Eagle Award for her work with Lap Dog Rescue of New Mexico. Lap Dog Rescue is dedicated to the rescue, rehabilitation, and re-homing of abandoned and abused animals. Lap Dog also helps senior citizens adopt suitable animals and provides medical care for their existing animals.

Marie volunteered more than 1,600 hours last year. A check for $500 was given to Barbara Hoffman of the Lap Dog Rescue of New Mexico in honor of Marie's volunteer efforts.

David, manager of Next Generation Monitoring Systems Dept. 5533, received the Goodness Award honoring the memory of inspiring Sandia volunteer Harriet Goodness. David participated in the Tricentennial event "Science Crawl" where he provided students exciting and engaging demonstrations of alternative energy.

David also has served as a CroSSlinks volunteer and coordinated a Family Science Night at his children's school. David not only volunteers but encourages his staff to volunteer.

Retiree Gerald Quinlan received the Retiree Shining Eagle Award. Gerald volunteered more than 1,000 hours with the Boy Scouts and has been an adult Scout leader for 15 years. He has also been a judge or judging chair at the New Mexico Science & Engineering Fair for 31 years.

Andy Whiting from the Sandia Boy Scout District Great Southwest Council was given a check for $500 in honor of Gerald's volunteer efforts.

To log your volunteer hours go to https://cfwebprod.sandia.gov/cfdocs/VolunteerHours/templates/index.cfm

Sandians honored in first-ever MOVE UP Awards

Sandian Felicia Duran (6861) and Sandia contractor Jeff Porter (5743) were honored in the first-ever Albuquerque Mayor's Office of Volunteerism and Engagement MOVE UP awards honoring outstanding volunteers for their service to others and the community.

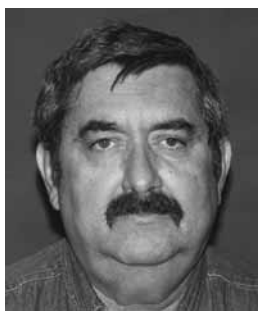
Felicia has volunteered with Hands On Science Outreach, Premier Soccer Academy, Junior Achievement, the Juvenile Diabetes Research Foundation, and the International Racquetball Federation World Senior Championships, all while pursuing her PhD.

Jeff has volunteered more than 400 hours and recruited more than 35 volunteers to help Presbyterian Disaster Relief Services rebuild the homes of more than 20 families on the Gulf Coast of Mississippi.

Mileposts

New Mexico photos by Michelle Fleming

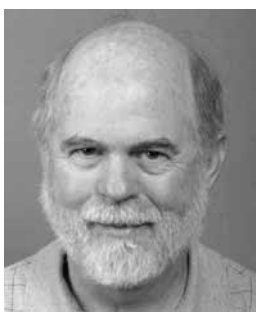
David Hawn
30 2725



Karl Hess
30 2915

Ralph Peters
30 6646

David Samuel
30 2992



Jerry Wymer
25 5425

David Cocain
20 12342

Warren Cox
15 10312

Rita Gonzales
15 1735

Danielle Nieto
15 10331

Daniel Urenda
15 6428

Recent Retirees

John Milloy
38 6928

Rose Omidvaran
30 4527

Sandra Chavez
25 2951

Ken Frazier
23 3651

Feedback

Have we become just another government consulting firm?

Q: *I was gratified by the candor with which the recent Feedback question about the normalization of benefits with industry was addressed, but I have a related but more fundamental concern that I believe needs to be addressed in tandem with that question. My concern is that in our quest to make private industry our benchmark, we have sold our soul when it comes to our mission and distinctive character as a national laboratory. In short, over the last five years or so we have become just another government consulting firm; we are no longer a national laboratory.*

Let me make my case. During the first decade of my career at the Labs, research and publication were valued activities by management. Project leaders would allocate work time to allow staff to write up project results for conferences and journals, and when a paper got accepted it would be announced at a department meeting. But over the last five to seven years the culture has changed, gradually, imperceptibly, like boiling a frog. Now publication is merely tolerated and even tacitly discouraged because it takes time away from program deliverables or business development work. The expectation is that conference papers and journal articles, if written at all, should be written as a labor of love on one's own time. Managers make statements like, "Anyone can get anything published somewhere" and "research is not real work." During a recent job interview I was floored when I was asked, "Has your PhD corrupted you into wanting to do research?" I can't imagine that statement being made a decade ago, and Sandia paid for my PhD!

But my business area is not an anomaly; instead, I am discovering that it is more of the norm in the culture of the new Sandia. Many of my friends in other vice presidencies report the same shift in value system. What is rewarded now is not research contribution but economic contribution, making the big sale, developing a new program area, bringing in a new customer with money to spend. In short, our value system is now no different than that of a large government-consulting firm. The danger is that our cost structure is higher than our consultant competitors, so that if we lose our research distinction our short-term value shift may result in our long-term demise.

So is it time to admit to ourselves and to our new hires that we are no longer a national laboratory, that we are instead a government consulting firm whose reward structure reinforces sales and marketing (as well as customer satisfaction) and downplays or even denigrates research and publication? Or is it time to reverse the slippage of our cultural values and recognize that research that adds to the national knowledge base is an integral part of our "exceptional service in the national interest," that it is our research edge that differentiates us from potential private sector competitors, and that our research edge must be preserved at all costs? The shape of my future career at the Labs is starting to depend on the answer to that question.

A: Thank you for your candid and insightful feedback. The laboratory has certainly changed over the past few decades, responding to an evolving set of national priorities at what seems to be an ever increasing and hectic pace. Your observation about attitudes toward research and publications is due in part to the increased competitive pressures on us. As you state, our ability to stay at the cutting edge of basic research and innovations in technology is absolutely vital to who we are and provides the foundation for our future value to the nation as a national security laboratory. The laboratory leadership shares your concern and is committed to making changes that emphasize the importance of research and discovery.

For example, the changes implemented in this year's LDRD program are recognition of the need to re-balance our portfolio with an increased emphasis on discovery and high-risk science and engineering research. We also have elevated "science-based engineering" to be a corporate long-term strategy and will be working to ensure that we have a deep science underpinning in all that we do. This is what differentiates us and it is fundamental to our culture. Our new programs in MESA and CINT, underpinned by modeling and simulation, give us a tremendous opportunity to lead the nation in world-class science and engineering, which we cannot miss. In June, we will be hosting a Sandia Summit, inviting in university deans and industry leaders from across the country to explore this topic and brainstorm ways that a national laboratory can contribute to defining next-generation, science-based engineering at multiple length scales.

Thanks also for pointing out that rewarding the research contribution is essential to supporting it. Publication statistics for the last 10 years show that Sandia lags the other two NNSA laboratories. We do show some bright spots in the citation indices but need to do better rewarding our staff. We also need to reconnect across management and staff to ensure the message regarding the importance of science and engineering research is clear and endures. We welcome any and all suggestions of how to do this better!

We also have elevated "science-based engineering" to be a corporate long-term strategy and will be working to ensure that we have a deep science underpinning in all that we do.

— Rick Stulen, VP (1000)
and Al Romig, SR VP (00004)

Sympathy

Carmen Nell Dickey of Springfield, Missouri, mother of Fred Dickey (2616), passed away on April 29.

Retiree deaths

Wayne A. Sebrell (age 74) . . . . . .April 5
John B.R. Davis (87) . . . . . .April 6
Paul T. Mathews (90) . . . . . .April 12
John R. Crye (85) . . . . . .April 12
Marvetta R. Davis (79) . . . . . .April 14
Marcel C. Schiess (89) . . . . . .April 15
Zelma E. Beisinger (78) . . . . . .April 15
Louis C. Baldwin (87) . . . . . .April 21
Helen A. Kent (96) . . . . . .April 21
Burl G. Duncan (83) . . . . . .April 22
Daniel Parsons (81) . . . . . .April 24
William J. Costales (73) . . . . . .April 24

Reflections of Daughters to Work Day

Sandians came to work with an extra spring in their step and a little extra pride in their bearing on April 27, the annual "Take Our Daughters to Work Day" at the Labs and around the country.

On that day, Sandians were encouraged to bring their daughters, granddaughters, sisters, nieces, and young female friends between the ages of 9 and 16 to work with them, show them their offices and, through job-shadowing, let them get a sense of what it's like to work at a national security laboratory.

Girls got the chance to see where Mom or Dad work; Mom or Dad, in turn, had a chance to show off a bit — to brag about their colleagues to their daughters and to brag about their daughters to their colleagues.

Take Our Daughters To Work Day was sponsored at Sandia by the Sandia's Women's Action Network (SWAN). Sandia has participated in this event since 1994.

In the photo at left, Greg Wickstrom (2125) and his daughter Maddie, 13, look at a stretch membrane heliostat at Sandia's solar tower facility. The solar tower, always a popular venue for visitors, hosted about 900 guests during Take Our Daughters to Work Day.

Photo by Amanda Montoya, age 12

Manager promotions

New Mexico

Tom Nelson from PMTS, Directed Energy Laser Applications Dept. 5444, to Manager of the department.

TOM NELSON

He was hired in 2000 and has since worked in directed energy programs. The specific programs Tom has been involved in require technology expertise in femtosecond lasers, linear and nonlinear spectroscopy, pulse propagation, materials interactions, laser development, and optics.

Tom has a BS from DePaul University and an MS and PhD from the University of Illinois Chicago Campus.

Danny Beets from Team Leader, Engineering Support Dept. 1385, to Manager of the department.

Before he joined Sandia in 1994, Danny had 11 years of experience in the Naval Nuclear Propulsion Program and three years of experience as a manager in technical support at Brunswick Nuclear Plant, a commercial nuclear power station.

DANNY BEETS

When he joined Sandia, Danny began as a radioactive waste engineer in Radioactive and Mixed Waste Management Dept. 10339. He became the facility supervisor of the department in 1996.

In 1997 he became the reactor operator and instrumentation and controls subject matter expert on the Tech Area 5 Annular Core Research Reactor in Nuclear Reactor Facilities Dept. 1381.

Danny has a BS in electrical engineering from Auburn University.

Video Services takes home nine awards in prestigious national videographer competition

Video Services Dept. 3653 won nine awards and received two honorable mentions in The Videographer Awards competition. The Videographer Awards is an annual international awards program that honors individuals and companies in the video production field. It turns the klieg lights on video professionals who are raising the standards of the industry and gives winners and their clients the recognition that their work is highly regarded by their peers.

The Videographer Award of Excellence is given to entries deemed exceptional. Video Services received awards of excellence for: "Recruiting DVD 2005," "State of the Labs 2006 Show Opener," "The Weapon Intern Program Presents the Graduating Class of 2005," and "Video Sandia — The Crack-O-Dile Hunter."

The Award of Distinction is presented for projects deemed outstanding. Video Services received this award for: "NWSMU All Hands," "The Royalty Awards 2005," "Sandia Corporate Overview 2006," "Video Sandia Safety First — Have a Plan," and "Video Sandia — Jerry Is Mad."

Honorable Mention is awarded to projects that exceed industry standards. Sandia winners were: "Weapon Intern Program 2005 Show Opening Montage" and "Video Sandia — Safety Rodeo."