

FUSELAGE STUDIES — Sandia researchers Jeff Gruda (1524), left, and Jim Phelan (6418) use Sandia's Visualization Lab (in the JCEL facility) to examine the results of a computer simulation that models the effects of an explosion on an aircraft fuselage. The simulation was conducted under NNSA's Advanced

Simulation and Computing program for the Transportation Security Administration. The research is helping develop a scientific basis for aviation security explosive detection requirements. For more about the program, see the story on page 3. (Photo by Randy Montoya)



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Sandia National Laboratories

Red Storm helps Navy shoot down errant satellite

By Michael Padilla

Sandia's Red Storm supercomputer helped the US Navy figure out how to shoot down an errant satellite in February.

The satellite failed shortly after its launch in 2006 and by early this year its orbit was deteriorating to the point where it was about to reenter the Earth's atmosphere. The satellite posed a potential safety hazard due to the frozen hydrazine propellant on board. The Navy shot down the satellite Feb. 20, 2008. The work had been classified until last week.

For about two months preceding the event, the Sandia team ran Red Storm simulations to assess and plan the complex mission. Researchers used all of Red Storm's 26,569 processors to perform simulations that allowed the team to predict various details and possibilities. The information contributed to the decision to proceed, and helped DoD plan and execute the shot, as well as conduct analysis after the satellite was brought down.

The work helped planners decide at what altitude to hit the satellite, how to hit it to minimize the spread of debris, including its hazardous fuel, and the best way to make sure the satellite was destroyed with a single shot.

Bill Guyton, director of Center 5400, says the team

(Continued on page 4)



JOSEPH MICHAEL (1822) displays a sample of dead *Bacillus anthracis* — the spore that causes the disease anthrax — that Labs researchers studied in the course of helping advance an FBI investigation into the 2001 anthrax attack on the US. (Photo by Randy Montoya)

FBI unveils science of anthrax investigation

Sandia's work demonstrated anthrax letters contained non-weaponized form

By Stephanie Holinka

They worked for almost seven years in secret. Most people did not know that the work in Ray Goehner's (1822) materials characterization department was contributing important information to the FBI's investigation of letters containing *Bacillus anthracis*, the spores that cause the disease anthrax. The spores were mailed in the fall of 2001 to several news

media offices and to two US senators. Five people were killed.

Sandia's work demonstrated to the FBI that the form of *B. anthracis* contained in those letters was not a weaponized form, a form of the bacteria prepared to disperse more readily. The possibility of a weaponized form was of great concern to investigators, says Joseph Michael (1822), the principal investigator for the project.

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That's that

Who hasn't been paying attention to the stock market and all things financial over the past few weeks? Speaking of which, don't you love how these crises, be they financial, meteorological, or geological, spawn so many instant experts, jowly sorts who pronounce weightily upon the import of these goings on – after they happen.

Hey, I say to the talking heads on TV, I bet you never heard of "mark-to-market" until yesterday afternoon. Sure, we're all a little bit fraudulent that way, but the paid pundits – of left and right – take the cake for bloviating self-importance and spurious insight. Reading the papers and blogs, watching the news, and listening to the radio, it strikes me that I'm the only guy in the US who doesn't have a clue or an opinion as to what happened on Wall Street or how to fix whatever it was that's happened.

I don't mind admitting – I'm not proud of it, but I'll admit it – that my understanding of stock markets, financial markets, and yes, "mark-to-markets," is pretty slim (and Slim, as they say, just walked out the door). That's why I've always been grateful for access through our 401(k) program to a professionally managed investment portfolio. Even so, when things go south fast in the stock market, when you look at the sinking numbers and the year-to-date percentage losses in your 401k, your confidence in the professionals begins to waver. Should your money even be in the market right now? What to do? What to do?

Knowing that I work alongside some of the smartest people around, I decided to put the matter to my fellow Sandians. Since I have some latitude in choosing the questions we pose in our online *Lab News Interactive* polls, I asked: "Do you intend to keep your retirement funds in a 401(k) or move to another form of retirement investment?" I included these response options: Stay the course. Bail out. Make measured changes. Don't know.

I answered the poll first and said "stay the course," but I didn't know if I was on the right track. As the numbers started to come in, I began to feel better and better. With 500-plus responses to the poll question, a strong majority of the smart folks around here chose the same answer I did: Stay the course. Whew. What a relief to see that just 3 percent of respondents chose the "bail out" option. Three percent. Hah!

But then I remembered something, a nagging something, a statistic I'd read somewhere: Mensa estimates that two percent of the population are true geniuses. Hmmm. Here at Sandia, we've probably self-selected a higher number than that. Just at a guess, I'd bet that our Sandia genius population is probably 50 percent higher than the national average. Say three percent.

Three percent!? Bail out! Bail out!

* * *

Sandia's ECP and SHARE campaigns are now under way. It says something special about the people here – and about our unique Sandia culture – that we embrace our responsibility to our own community with the same vigor we bring to our national security mission. Deciding how much to contribute to ECP or SHARE – or even whether to contribute at all – is very much a personal choice and there are many good and compelling reasons why an individual might choose not to. Regardless of your personal decision, one thing is for sure: There are folks out there who need our help. So if you do participate, whether it's via regular deduction from your paycheck, a one-time contribution, or some other means, you can take satisfaction in knowing that your contribution is being put to good use in your community.

See you next time.

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

Sandia LabNews

Sandia National Laboratories

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LOCKHEED MARTIN

HR & Communication VP John Slipke happy to be at Sandia

By Iris Aboytes

Human Resources & Communication Div. VP John Slipke 3000 came to Sandia from Lockheed Martin's Aeronautics Global Sustainment organization in Greenville, S.C. "I welcomed the opportunity to be associated with a nationally known organization with a great reputation for national service," says John.

"Coming to New Mexico wasn't an easy decision to make," he says, noting that his family had made a home in Greenville. When John accepted the Sandia position, Bridget, his wife of 27 years, and his son



JOHN SLIPKE

Michael stayed behind in Greenville so Michael could finish his senior year in high school. John's oldest son Ryan works in South Carolina, and his daughter Devin is a senior at Clemson University.

John has found that he likes the culture and climate of New Mexico. He has made many friends who have helped him explore Albuquerque and Santa Fe. He enjoys golf and admits to

being a history buff. He has also taken up bicycling thanks to the beautiful weather.

John earned his bachelor's degree in journalism and master's degree in labor and industrial relations from Michigan State University and his MBA from the University of Southern California.

Before coming to Sandia, John was vice president for Lockheed Martin's Aeronautics Global Sustainment organization. Since joining Lockheed Martin in 1979, he has wide experience in several human resource disciplines including compensation, benefits, organization development, employee and labor relations, staffing and planning, security, and safety.

John confesses to being a frustrated journalist and is definitely a news junkie. "I enjoy being involved in the strategy of communications," he says. "My goal is to help better communicate our leadership's vision for the future Sandia."

Most of John's time at Sandia has involved initiating change. "Many people look at change as an uncertainty," says John. "We have a key role in today's environment to communicate change."

"I am proud to be at Sandia, which has tremendous capabilities and talent," says John. "We face a lot of changes, but if we work together, we can manage them. I have a lot of confidence in our leadership team and the Laboratories as a whole."

Recent Patents

Note: Patents listed here include the names of active Sandians only; former Sandians and non-Sandia inventors are not included. Following the listing for each patent is a patent number, which is searchable at the US Patent and Trademark Office website (www.uspto.gov).

Stewart Griffiths (8700) and Bon Nilson (8755): Apparatus for Producing a Thin Sample in a Microchannel System (Patent No. 7,371,310)

Thomas Reichardt (8321) and Thomas Kulp (both 8368): Natural Gas Leak Mapper (Patent No. 7,375,814)

James McElhanon (1821), Greg Jamison (5918), Kamyar Rahimian (1821), Blake Simmons (8755), Chad Staiger (6338), David R. Wheeler (1714), and Tom Zifer (8778): Method for Preparing Thermally Cleavable Surfactants Without Deprotonation (Patent No. 7,378,533)

Chris Forsythe (6341), Ann Speed (6343), Sabina Jordan (6323), and Patrick Xavier (6344): Simulation of Human Decision Making (Patent No. 7,370,023)

Karen Krafcik (8778), Alfredo Morales (8778), Blake Simmons (8755), and Linda Domeier (8778): Bonding Thermoplastic Polymers (Patent No. 7,390,377)

Mark Tucker (6327): Enhanced Formulation for Neutralization of Chemical, Biological, and Industrial Toxants (Patent No. 7,390,432)

Douglas Stark (8229), and Christopher Kershaw (8227): Modular Sensor Network Node (Patent No. 7,386,352)

Bob Crocker (8125), and Kamlesh Patel (8324): High-Pressure Microhydraulic Actuator (Patent No. 7,384,526)

Mark Reece, Gerald Knorovsky, and Danny MacCallum (all 1813): Non-Contact Handling Device (Patent No. 7,216,821)

Jamie Stamps (8229) and Dan Yee (8239): Modular High Voltage Power Supply for Chemical Analysis (Patent No. 7,400,119)

Kirtland military blood drive

An Armed Services Blood Program (ASBP) blood drive is scheduled at the Coronado Club on Oct. 14, 7 a.m.-noon; Oct. 15, 10 a.m.-3 p.m.; and Oct. 16, noon-6 p.m.

Appointments can be scheduled by going to www.militarylifeforce.com. Type in Kirtland for the sponsor code. Walk-ins are welcome.

The ASBP is a network of blood transshipment centers and blood product depots that ensure support of front-line medical response units around the globe. Half of the blood collected is transported directly to our military troops in Iraq and Afghanistan. The other half is sent to military treatment facilities.



Congratulations

To Brian (5355) and Katelyn (5253) Milesoshky, on the birth of their second child, Landon, a boy, on Aug. 28.

Take Note

Retiring and not seen in the *Lab News* pictures: Dennis Johnson (5335), 15 years; Patricia Kaufmann (9514), 20 years; and F. Lorraine Luna (5254), 28 years.

Examining aircraft bomb issues

Sandia, Transportation Security Administration taking advantage of supercomputing capabilities

By Mike Janes

When the Advanced Simulation and Computing (ASC) program was established by the DOE in 1995, the end result was a shift in emphasis from test-based confidence in the nation's nuclear arsenal to simulation-based confidence.

But the ASC program — which is now an NNSA program — and the computer modeling capability at its core are now providing a new, no less vital service: developing a scientific basis for aviation security explosive detection requirements. The findings are expected to lead to revisions to the Transportation Security Administration's certification standards.

"Today, under ASC, computer simulation capabilities are routinely developed to analyze and predict the performance, safety, and reliability of nuclear weapons and to certify their functionality," says Sandia's Jim Phelan (6418), who leads the tri-lab effort. "We're now able to leverage that capability and apply it to the important problem of damage from explosives aboard aircraft."

The current requirements for screening checked baggage for explosives at airports were established in 1993 following the Pan Am Flight 103 bombing in 1988. The requirements, however, were based on forensic assessments of historic incidents and actual explosive tests with retired aircraft. Such assessments, says Jim, offer incomplete and limited knowledge of factors that must be considered when trying to mitigate the threat of onboard explosions.

"Today, we have a much better understanding of the range of explosives threats, such as liquid explosives

and homemade bombs," says Jim. "But what we have not had is a more detailed understanding of the differing explosive power from potential threat materials and the impact on the aircraft structure. That's where computational modeling comes in."

Leveraging the high-performance computing capability DOE has developed over the past decade, Sandia and its partners — Lawrence Livermore National Laboratory and Los Alamos National Laboratory — now have access to lightning-fast supercomputers, parallel computing software, and visualization features currently used to support the nation's nuclear weapons complex.

"ASC tools are very applicable to solving the aviation onboard explosion problem," says Jim. Computational modeling, he says, offers a scientific basis for the breadth of explosive threats that cannot be derived by the empirical tests historically conducted.

"Those kinds of tests have to be done, because they are the ground truth for actual aircraft explosions," Jim says. But such tests alone, he adds, can't adequately examine the multitude of factors that must be considered, including explosives and aircraft types, threat quantity, onboard locations, flight conditions, and other physical details that factor into managing the risks from aviation terrorism.

"You absolutely must do modeling to assess where the threshold is before performing a test," he says.

The tri-lab team's first order of business when taking on this challenge last year was to "scope" the problem and determine how ASC tools could best go about tackling it. In December, a briefing that included several

sample simulation results was delivered to TSA, which then asked the team to reproduce a series of historic experimental tests and determine whether modeling could, indeed, produce valid results. Another briefing, in June, confirmed the modeling capability.

Computational modeling, says Jim, offers several advantages above and beyond the obvious avoidance of aircraft destruction for experimental purposes. Hydrodynamic blast models, which are supported by decades of explosive science measurement and analysis, accurately determine the high pressures caused by detonations. Finite element structural models, which represent the structural components of an aircraft's airframe, can show the tearing, bending, and breaking of the airframe components.

The tri-lab team is working with a major aircraft manufacturer to use detailed structural information on one of the aircraft in today's fleet, information that is subsequently used in the computational models. By this fall, the team will provide TSA with a report on the vulnerability to a common fleet aircraft, and revisions to the certification standards are expected to commence shortly thereafter.

Jim emphasizes that the project has been a team effort, with contributions from Dennis Roach (6416) and the Aircraft Airworthiness project; Ken Smith (6418) from Contraband Detection Dept; Jeff Gruda (1524), Kenneth Gwinn (1524), Jonathan Rath (1524), Tim Shelton (1524) and Marlin Kipp (1431) from the Advanced Simulation and Computing program; and Jerry Stofleth (5434) and the Explosives Applications Department.



Photos by Randy Wong

Sept. 29 was a day of celebration at Sandia/California. Nearly 600 members of the workforce gathered for the site photo, the first in 10 years, which was followed by a team celebration. Div. 8000 VP Paul Hommert spoke about the successes of the past year and shared his passion for the Sandia Helps and Reaches Everyone (SHARE) program, which kicked off that day. Everyone enjoyed a barbecue lunch, ice cream, and raffle prizes.

During the team celebration, representatives from more than 40 nonprofit community-based organizations were on site to talk to members of the workforce about the causes they champion. The Tri-Valley Community Foundation coordinates distribution of Sandia's contributions free of charge.

Sandia/California's 2009 SHARE campaign runs through Oct. 22. For more information, see <http://public.ca.sandia.gov/SHARE>.



Anthrax

(Continued from page 1)

This information was crucial in ruling out state-sponsored terrorism.

In the fall of 2001, the FBI considered how best to investigate the anthrax letters. The agency convened two blue ribbon exploratory panels, and Sandia's name came up during both panels for its expertise in electron and ion microscopies and microanalysis over the range of length scales from millimeters down to nanometers. The first spore material from the letters arrived at Sandia in February 2002.

The team worked under an Intelligence Work for Others (IWFO) contract with the FBI. Sandia faced

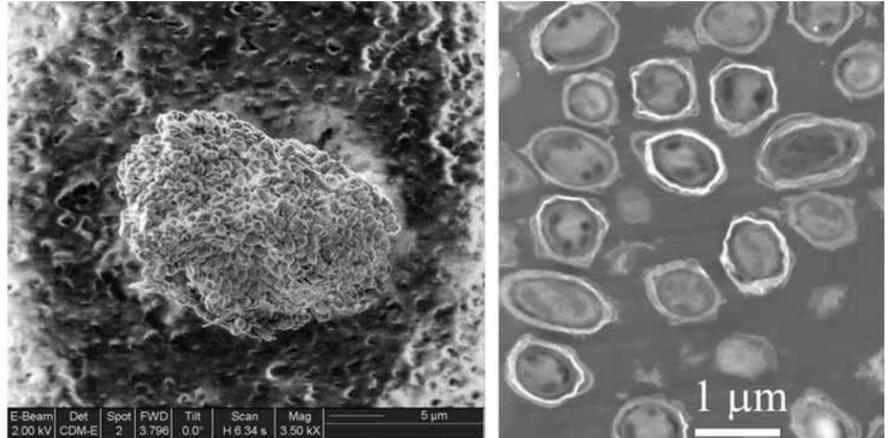
some uncertainty in working on this type of project. Researchers signed nondisclosure agreements and agreed to make themselves available to government agencies on short notice when called to give information.

Joseph, transmission electron microscopy (TEM) lab owner Paul Kotula (1822), and a team of roughly a dozen others examined more than 200 samples in those six and a half years. The samples analyzed at Sandia were confirmed to be nonviable prior to arriving at the Labs. They received samples from the letter delivered to the *New York Post*, to former Sen. Tom Daschle (D-S.D.), and to Sen. Patrick Leahy (D-Vt.). The samples looked different, in part because of how they were prepared, which made examination initially difficult.

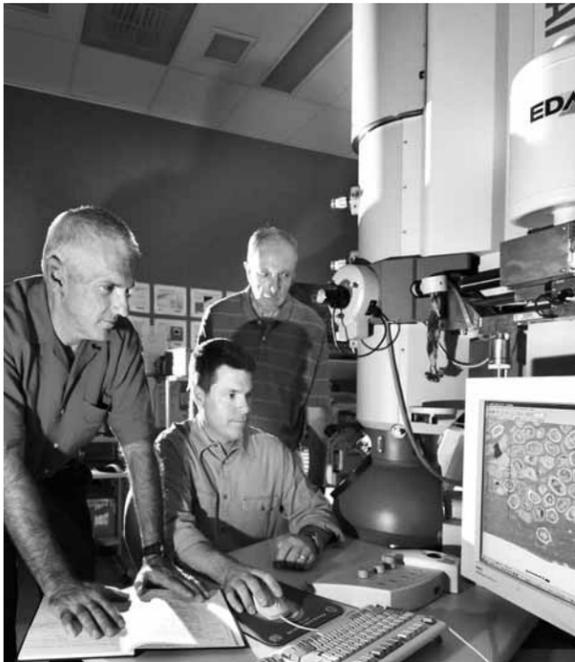
When *B. anthracis* spores are weaponized, the spores are coated with silica nanoparticles that look almost like lint under the microscope. The "lint" makes the particles "bouncier" and less likely to clump and fall to the ground. That makes the spores more respirable and able to do more damage, says Joe. Weaponization of the spores would be an indicator of state-sponsored terrorism.

"Initially, scanning electron microscopy [SEM] conducted at another laboratory showed high silicon and oxygen signals that led that lab to conclude that the spores were a weaponized form," says Paul. "The possible misinterpretation of the SEM results arose because microanalysis in the SEM is not a surface-sensitive tool," says Paul. "Because a spore body can be 1.5 to 2 microns wide by 1 micron long, a SEM cannot localize the elemental signal from whole spore bodies."

Using more sensitive transmission electron microscopy, Joe and Paul's research indicated that the silica in the spore samples was not added artificially, but was incorporated as a natural part of the spore formation process. "The spores we examined," Paul says, "lacked that fuzzy outer coating that would indicate that they'd been weaponized."



BACILLUS anthracis spores as viewed via scanning electron microscopy (left) and transmission electron microscopy (right).



MATERIAL CHARACTERIZATION ANALYSTS (from left) Joseph Michael, Paul Kotula, and Ray Goehner (all 1822) helped the FBI rule out state-sponsored terrorism as the source for the anthrax used in the 2001 anthrax attack on the US. (Photo by Randy Montoya)

Sandia's work was the first to actually link the spore material in the *New York Post*, the Daschle, and the Leahy letters. The elemental signatures and the locations of these signatures, while not indicating intentional weaponization, did show that the spores were indistinguishable and therefore likely came from the same source. That conclusion was corroborated a few years later by the DNA studies.

The materials characterization lab serves as a materials analysis resource for a diverse collection of projects. The lab plays an important role in stockpile surveillance, supporting Sandia's nuclear weapons mission.

Joe was recently released from his nondisclosure agreement and flown to Washington, D.C., to participate in news conferences at FBI headquarters along with several members of research teams who'd been asked to examine other aspects of the anthrax case.

The FBI was pleased with Sandia's work, says Joe.

Anthrax investigation team:

Vance Behr (5930), Luke Brewer (1814), Jim Chavez (5900), Michael Cieslak (2800), Robert Fisher (1820), Richard Grant (1822), David Haaland (8332), Lisa Hooper (4127), Michael Keenan (1822), Jim Maroone (1820), Bonnie McKenzie (1822), Freer McNamara (2736), Tony Ohlhausen (1822), Michael Rye (1822), Dave Tallant (1822), Kevin Zavadil (1825).

Red Storm

(Continued from page 1)

was called upon because of its years of experience in missile defense intercept simulations of reentry vehicles.

Daniel Kelly, manager of Lethality and Threat Dept. 5417, led the team of six staff members who were called upon to perform hundreds of impact simulations in a matter of days and weeks to answer critical technical questions affecting early decisions to go forward with the operation.

"We were contacted on Jan. 11, 2008, by the Missile Defense Agency and asked to deliver in nine days the required 'hit point' for high probability of success," says Daniel. "The team put in a lot of long days, and with help from resources across the laboratory, provided results for several pivotal deadlines during the buildup to the operation."

The team also supported operation day at Schriever AFB, Colo., to assist in the real-time assessment of the event where decisions were made that a second intercept shot was not required.

"Our team did a great job in providing the simulation data necessary to complete this important mission," said NNSA Administrator Thomas D'Agostino. "This is a great example of the ways that the nation's investment in nuclear deterrence can be more broadly employed for national security."



TEAM SUCCESS — Sandians pitched in to help the Missile Defense Agency determine the optimal options for shooting down an errant satellite. Team members included, from left, Mehdi Eliassi (5417), Tommy Barreras (2996), Greg Bessette (5417), Sue Goudy (5417), USAF Maj. Gen. Chris Anzalone, Analisa Martinez (5402), Jeromy Hollenshead (5417), and Dan Kelly (5417). Anzalone is deputy for Test, Integration, and Fielding for the US Missile Defense Agency.

Did you know

ECP campaign runs through Oct. 24

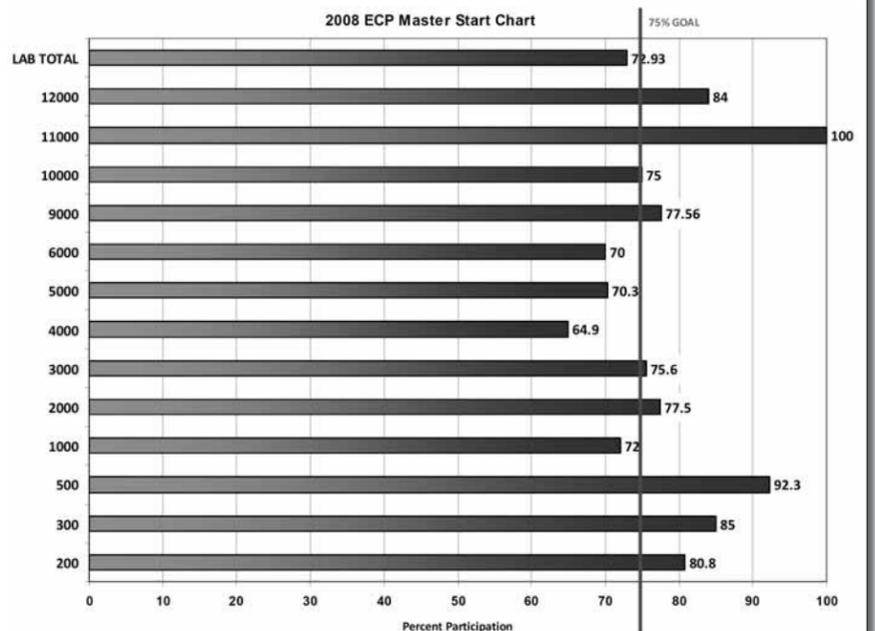


- Sandia has been the No. 1 giver to United Way of Central New Mexico for more than 50 years.
- Sandia's first pledge total in 1957 was \$96,100. In 1983 Sandia employees pledged \$1,038,658. In 1999, the total was \$2,002,723. Last year's pledge amount was \$3,702,968, with \$500,000 coming from Sandia retirees. Will this year's total reach \$4 million?
- 100 percent of ECP donations go to people who need them; administrative costs are covered through the Corporate Cornerstones program.
- Community fund donations are backed by a money-back guarantee. If you are

not satisfied, you can request a refund.

- United Way of Central New Mexico was born in 1934 as the Albuquerque Community Chest.
- Bernalillo, Sandoval, Torrance, and Valencia counties are helped by the United Way of Central New Mexico.
- Pam Catanach (3652) and Larry Walker (2900) chair this year's ECP campaign.

The chart at right shows the percentage participation of each of Sandia's divisions for last year's record-setting campaign. The goal of the current campaign is to attain 75 percent participation Labs-wide.



Formidable NINE coalition merges industry, university, national lab goals

Innovative nanotechnology education program struggles towards the light

By Neal Singer

Leaders of Sandia's fledgling National Institute for Nanotechnology Education (NINE) live a more complicated life than researchers who only must convince a single agency to fund research.

At a first technical workshop held at the Albuquerque Marriott not long ago, Sandia management and researchers worked for several days with 60 national lab, industrial, and academic management partners to agree on common nanotechnology topics all could support with funds, equipment, or experience.

As Regan Stinnett (1817), NINE program manager, summarized, NINE's target is to increase "the involvement of DOE labs with universities and industry to

jointly help develop the next generation of US global innovators." The developed program must "not only be credible and effective but also replicatable so that it can be used by other DOE labs," he said.

The goal is to produce a self-motivated, innovative, entrepreneurially oriented student with the technical training and economic skills to follow his or her ideas to fruition and make them practical, marketable, and valuable to the nation.

"NINE is a way for us to anticipate and create the future, rather than just reacting to it."

Regan Stinnett

NINE workshop attendees agree to focus on four areas of study

NINE director Duane Dimos (1800) heads the project and is involved with high-level DOE interactions.

Justine Johannes (1810), senior manager for NINE, led discussions at a recent workshop that narrowed down a wide field of possible nanotechnology areas of study to the four ultimately accepted as being of mutual interest:

- Atomic layer control, nanopatterning, and scalable directed self assembly for IT, photonics, and large-area nanomanufacturing
- Nanoengineered chemical processing
- Synthesis and modeling of active nanocomposites and smart materials
- Nanoenabled, low-cost, self-powering sensors for extreme environments



Sandia VP Rick Stulen (1000), who originated the project, opened the meeting with a hope and a warning.

"DOE has a tremendous desire for us to make something happen in improving the focus of US science education," he said. "The personal leadership each of us brings is what will help keep this project going. We must continue to push the pace of developments and ensure we connect R&D activities to real competitiveness issues. If the speed with which we advance this project turns

"The personal leadership each of us brings is what will help keep this project going. We must continue to push the pace of developments and ensure we connect R&D activities to real competitiveness issues. If the speed with which we advance this project turns sluggish, the enterprise will fade away."

Sandia VP Rick Stulen

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Representatives from environments that would seem to have the right stuff included Corning, Exxon Mobil, Goodyear, IBM, Intel, Lockheed Martin, and Monsanto. Universities represented include Harvard University, Harvey Mudd College, Massachusetts Institute of Technology, Notre Dame University, Rice University, Rensselaer Polytechnic Institute, University of California, Davis, University of Florida, University of Illinois, University of New Mexico, University of Wisconsin, University of Texas at Austin, as well as New Mexico Highlands University and Purdue University. Also present were representatives from the Semiconductor Research Corporation and the National Science Foundation.

The formidable coalition must mesh different goals to be successful.

University professors are interested in educating students, winning grants, and publishing their research. National lab researchers are interested, among other things, in developing capabilities of value to their national security missions. Business representatives need projects they can endorse to their bosses with the statement, "This will make us money."

The challenge for NINE administrators is to harness the energies of these divergent participants so that they pull in a single direction.

The project is presently funded with \$7.5 million per year from Sandia's Laboratory Directed Research and Development program, the National Nanotechnology Enterprise Development Center (NNEDC), and program management monies. An immediate goal is NINE's selection as a DOE Discovery Science and Engineering Innovation Institute under the American Competes Act.

The Act was sparked by the warnings from Norm Augustine and others in the *Rising above the Gathering Storm* report sponsored jointly by the National Academy of Science and the National Academy of Engineering. The report argued that new action was needed to attract American students to enter science and engineering and equip them as technical innovators to compete successfully on a global scale.

Rick's motivation in forming NINE was sparked by Sandia Labs Director Tom Hunter's feeling that the Labs should be part of the solution to the perceived problem.

"NINE is a way for us to anticipate and create the future, rather than just react to it," says Regan.

The somewhat radical educational approach of NINE offers smart students educational experiences similar, in a way, to the hands-on, apprenticeship model of the 19th century rather than the classroom-structured learning of the 20th century. In NINE, students learn their scientific "trade" by working with university, national lab, and business mentors on large, multidisciplinary projects of high value to the nation. The university provides pedagogical expertise and basic understanding of their fields, the national lab provides multidisciplinary technical experience and mentoring plus access to state-of-art-facilities, and businesses provide economic and market insight so that inventions followed a path that might eventually lead to products that change how people live — the introduction of something new, the definition of innovation.

The hope is that original output from these students — who have been following their own research interests and ideas with unprecedented leverage from NINE — will make money for industry, help national defense, originate innovative technical discoveries and papers, start new businesses, and receive research grant monies, not necessarily in that order.

To industry reps who wondered why they should help fund the Sandia-led NINE program rather than others already in existence, UNM management professor and microelectromechanical systems consultant Steve Walsh responded, "Other programs are completely different. They give money to university centers. They don't access the tremendous leverage provided by the involvement of the expertise and facilities of DOE's national labs or the synergies resulting from the partnerships being built here.

"Look at who we have here," he said, gesturing at the workshop participants.

Sandians in key nanotech areas with NINE students

Randy Schunk (1516), modeling and simulation: Amit Kumar, University of Illinois; Babatunde (Tunde) Oguntade, University of Texas at Austin

Mary Crawford (1123), solid state lighting: Frank Mont, Dept. of Electrical, Computer, and Systems Engineering, Rensselaer Polytechnic Institute (graduate student)

Kate Bogart (1126), proximity-field nanopatterning (PnP) Lithography: Dan Shir, Dept. of Materials Science and Engineering, University of Illinois, Urbana-Champaign; Bayo Falase, Dept. of Chemical and Nuclear Engineering, University of New Mexico; Mehmet Su, Dept. of Computer Engineering, University of New Mexico

Alec Talin (8756), nanoelectronics: Tania Henry, Yale; Aaron Katzenmeyer, UC Davis, both majoring in Electrical Engineering.

Brian Swartzentruber (1132), nanoscale characterization: Tania Henry, Yale.

Jim Miller (1815), nano-enabled chemical processing (unavailable).

Tim Boyle (1815), nanosynthesis: Norma Wells University of New Mexico, Chemical and Nuclear Engineering, UNM; Ray Scheffler, Materials Science and Engineering, University of Florida; Sungjin Park, Mechanical Engineering, University of Texas at Austin; Jason Burbey Materials Engineering, Purdue University

New Training Accountability System brings consistency, ensures compliance

By Bill Murphy

When Sandia launches its new Training Accountability System on Oct. 31, it will mark a giant step forward in helping to ensure that the Labs' workforce is fully prepared to perform assigned work by completing all requisite training.

The Training Accountability System, or TAS, is a sophisticated new enhanced notification tool that is integrated with Sandia's TEDS training system.

Everyone at Sandia is familiar with the TEDS notifications, the email messages that remind you that you have until a particular date to complete a specific training requirement.

The new TAS system takes that notification process a couple of steps further by bringing managers more proactively into the process.

The new system will notify managers when individuals in their organization are approaching training deadline dates and requires managers to take specific actions if and when individuals become out of compliance.

The system, which is automated, has escalating measures built in. That is, if an individual remains out of compliance with required training, the system first brings the manager into the equation and then escalates to the senior manager level and so on until the training/compliance issue is resolved.

There may be valid reasons why training hasn't been completed. If that is the case TAS allows managers to stipulate such reasons and take action to bring the individual into compliance. Jodi Case (3521), the TAS functional team lead, notes that at any given time 300 to 400 members of the workforce are out of compliance for required training — including some portion who are not in compliance with

medium- to high-rigor safety and/or security training. Given that number, she notes, it is clear that the current tools and communications have not been effective in meeting Sandia's policy requirement of 100 percent compliance.

Staying up to date on training isn't just a bureaucratic or administrative issue: safety of the workforce and the security of the Labs are at stake, Jodi says. When individuals who are not properly trained are involved in safety or security incidents, not only is the worker affected, but the Labs faces fines, penalties, and even potential legal actions.

Given the current state — those 300 to 400 individuals who are out of compliance with some training at any given time — it had become clear to management that Sandia needed to have a better way to ensure that all needed training is being completed. That's where TAS came in.

The TAS, Jodi emphasizes, is not a new requirement placed upon managers; they are already required to make sure their people are properly trained for the work they perform. Rather, Jodi says, TAS is a tool to help managers ensure that their people are up to date on all compliance training and also allows managers to document efforts made to improve compliance for required training or to document and track work restrictions.

Some organizations, Jodi says, have traditionally been much more effective in ensuring total training compliance than others. TAS, she says, brings consistency to the process across the entire Labs.

As the Oct. 31 implementation date approaches, the TAS rollout will be publicized in the *Sandia Daily News* and via a LeaderWire announcement aimed specifically at managers.

Sandia, Kirtland celebrate Hispanic Heritage Month



Sandia and Team Kirtland joined to conduct a series of special events to mark Hispanic Heritage Month 2008, including Entertainment Day held Oct. 2 in the Steve Schiff Auditorium. Among the groups performing on the festive day was Mariachi San Jose, featuring Micah (on trumpet) and Alissa (on guitarron) Ohlhausen, daughters of Sandians Robin (2736) and Tony (1813) Ohlhausen. Other events during the month have included writing and art contests, Latin Night, and a Hispanic story time for children. Upcoming events include a bilingual mass and dinner at the KAFB chapel at 6 p.m. Oct. 11 and a Youth Fiesta Oct. 15 2-4 p.m. at the Kirtland Youth Center.

Hispanic Heritage Month is observed annually in the US as the period to recognize the contributions of Hispanic Americans to the US and to celebrate Hispanic heritage and culture. In 1968, President Lyndon Johnson proclaimed the first Hispanic Heritage Week. It was expanded by President Ronald Reagan in 1988 to cover a 31-day period starting on Sept. 15 and ending Oct. 15. Sept. 15 marks the anniversary of the independence of five Latin American countries: Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua. They all declared independence in 1821. Mexico and Chile celebrate their independence days on Sept. 16 and Sept. 18, respectively.

(Photo by Randy Montoya)

HENAAC PIONEER

Ron Moya honored for professional achievements that have broken barriers and opened doors for others

By Iris Aboytes

Ron Moya will receive the Pioneer Award from the Hispanic Engineering National Achievement Awards Corporation (HENAAC) in Houston, Texas, on Oct. 11. The Pioneer Award is presented to individuals whose professional achievements in science, engineering, and technology have broken traditional barriers and opened doors for others.

As the director of Security Systems Technology Center 6400, Ron's organization develops advanced security systems and technologies, nuclear incident response technologies, robotic and intelligent systems, and aircraft assurance inspection methods. Much of the work activity in the center is classified and a significant portion involves hazardous operations.

Ron's center serves multiple customers including DOE, US Air Force, US Navy, Department of Homeland Security, US Missile Defense Agency, and numerous other government agencies. Ron also serves as a mission owner in Sandia's Homeland Security and Defense Strategic Management Unit and as a member of the Energy, Resources, and Nonproliferation SMU Board of Directors.

Ron came to Sandia 29 years ago after receiving a bachelor's degree in mechanical engineering from New Mexico State University. He participated in Sandia's One-

Year-on-Campus program and received a master's degree in mechanical engineering from Stanford University.

"My first assignment at Sandia involved developing methods to protect a nuclear facility against a truck," says Ron. "Before reaching the end of the project, a tragic incident occurred in Beirut, Lebanon — terrorists had detonated a truck bomb outside the US Marine Corps barracks and killed hundreds of Marines. My phone was busy for several months. I advised agencies in Washington, D.C., on methods to protect the White House, Capitol building, and other key government facilities. The solutions we developed have been widely implemented at many facilities."

One of the highlights of Ron's career at Sandia is having worked on both the Strategic Arms Reduction Treaty and the Intermediate-Range Nuclear Forces Treaty between the US and the Soviet Union.

"Growing up on a farm allowed me to learn about making decisions, working hard, and managing resources," says Ron. "While my dad worked for the railroad, my brothers and I ran the farm. I spent many hours repairing tractors and other farm equipment, a hands-on introduction to electromechanical systems."

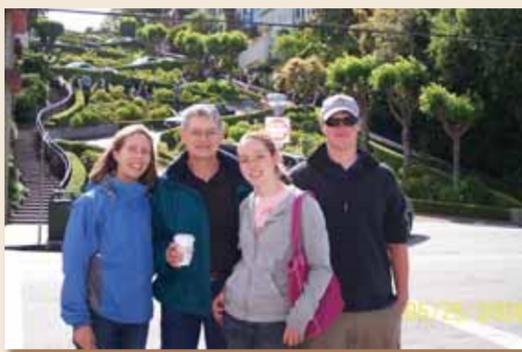
His mother, Mary Jo, and his father, Paul, did not attend college, but they insisted their children earn a college education. "My father pushed constantly," says Ron. "The issue was not negotiable. I often wonder

about his passion, considering he never went to college himself. Mary Jo and Paul were successful. All their children are college graduates."

Ron and his wife Mary, a former Sandia employee, have two children, son Xavier, and daughter Raquel. "Once our children arrived, I learned to achieve a better work/life balance," he says. "I volunteer for our kids' school and sporting events. I also support activities that bring new opportunities to Hispanic youth and promote Hispanic culture."

Ron's hidden talents include playing classical guitar and making tortillas. He has adapted his family tortilla recipe to include whole grains. His weekly batches supply his immediate family and become special gifts for extended family and friends.

"Ron is the kind of person each of us should hope our children would want to emulate," says VP of Regional Technologies Lenny Martinez. "He is an individual who constantly challenges himself physically, spiritually, and intellectually."



SEEING THE SIGHTS — Ron Moya with wife Mary, daughter Raquel, and son Xavier in San Francisco.

About HENAAC

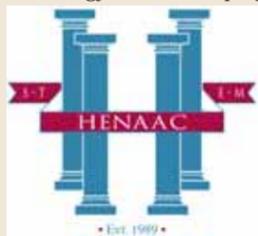
HENAAC was established in 1989 as a means of identifying, honoring, and documenting the contributions of outstanding Hispanic American science, engineering, technology and math professionals. Corporations, government agencies, academic institutions, the military, and the business community have submitted thousands of nominees over the past 19 years for HENAAC recognition.

The HENAAC acronym stood for the Hispanic Engineer National Achievement Awards Conference. In 1996 HENAAC became a 501(c) (3) educational programs nonprofit organization. This new classification allowed HENAAC to develop additional educational programs beyond the conference. In 2000, HENAAC introduced the College Bowl, an innovative, competitive two-day workshop for college students preparing

to enter engineering careers.

In 2001, HENAAC launched Viva Technology, a K-12 educational program designed to introduce precollege students to careers in science, engineering and technology. This same year, HENAAC launched its Scholars program, providing scholarships to college students pursuing engineering and science careers. In addition to these programs HENAAC puts on a yearly National Career Conference and Awards Show, provides travel grants to college students, conducts research and has a Hispanic Hall of Fame exhibit.

The HENAAC Board of Directors voted in 2005 to drop the use of the acronym and changed the official name and tag line to "HENAAC, Promoting Careers in Science, Technology, Engineering and Math."



Feedback

Public transportation, allowable time

Q: How can a nonexempt employee account for their time when they use public transportation, which sometimes requires arriving a few minutes late and/or leaving a few minutes early from work. (It's just how the ABQ RIDE is set up.) The other option is waiting an additional 20 minutes for another route, which eliminates the commuter route and adds greatly to travel time.

Is there any provision for commuters who are subject to buses running late or leaving the office a few minutes early to catch a bus? How are these "minutes" to be accounted for? If I were an exempt employee, I don't see this as an issue.

A: Ordinary commuting time between home and work is not considered compensable time for non-exempt employees. However, employees may round their time up or down if the shortage or overage is "insubstantial and insignificant" and for a good reason. Generally, 10 minutes is considered to be insubstantial and insignificant. Further, riding on public transportation is something that Sandia wants to encourage. Therefore, "arriving a few minutes late, and leaving a few minutes early" to use public transportation is allowable if approved by your immediate manager. However, there are some positions at Sandia where late arrivals and early departures, even of only a few minutes, can have significant consequences, so it is important to discuss the situation with your manager.

— Melissa Eakes (3002)