Sandia LabNews
Vol. 65, No. 2 February 8, 2013
Managed by Sandia Corporation for the National Nuclear Security Administration
Sandia National Laboratories

Quality trio

Three Sandians have been honored with Black Engineer of the Year Awards. Read about Dennis Owens, J. Anthony Wingate, and Carl Rhinehart in a story beginning on page 12.

Economic engine

Report spotlights Sandia's impact on New Mexico

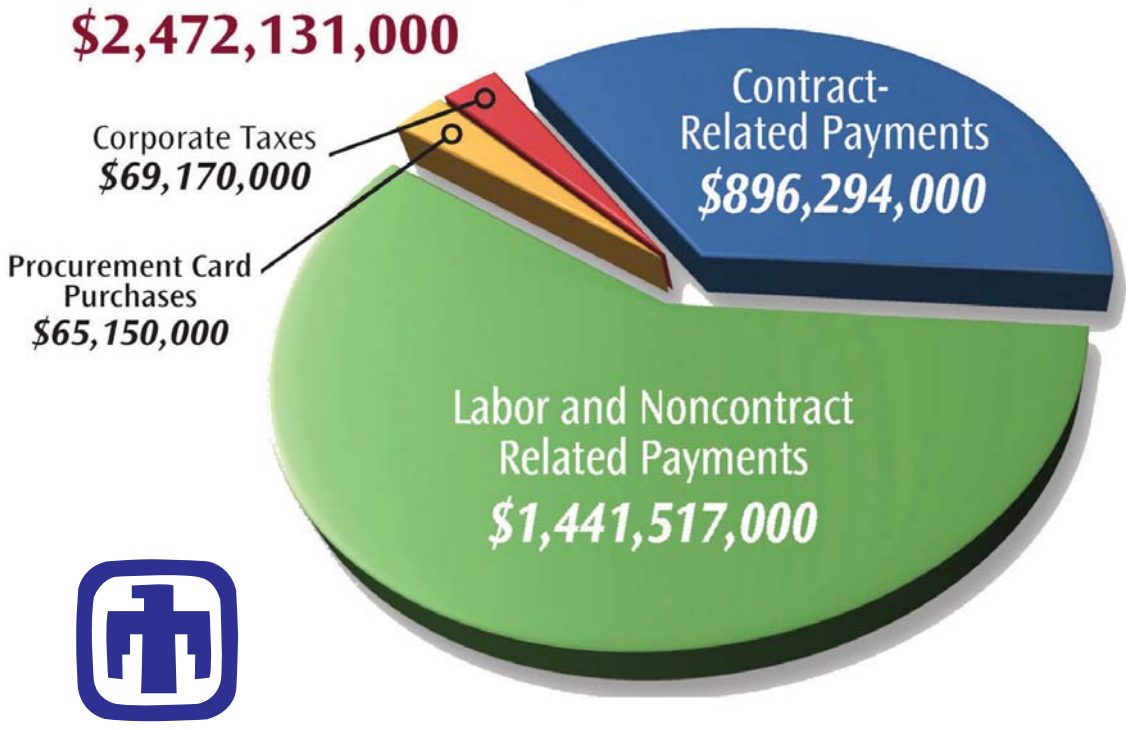
By Nancy Salem

Sandia spent roughly $900 million on goods and services in fiscal year 2012 and New Mexico businesses were awarded more than $400 million, or 45 percent, of the total, according to the Labs' latest economic impact report.

US small businesses received $472.7 million in Sandia contracts, with the New Mexico share totaling $255.9 million, or 64 percent.

"I am proud to say that fiscal year 2012 stood out as another consecutive year where Sandia exceeded its overarching small business goal and, in addition, all but one of its sub-tier small/socio-economic goals," says Don Devoti, manager of Small Business Utilization Dept. 10222. "Sandia's commitment to identify and contract with qualified, capable small business suppliers continues to push new frontiers."

(Continued on page 3)



Paul Hommert named FLC Laboratory Director of the Year

By Nancy Salem

SANDIA PRESIDENT AND LABS DIRECTOR PAUL HOMMERT

Paul Hommert has been named 2013 Laboratory Director of the Year by the Federal Laboratory Consortium (FLC) for his support of Sandia's technology transfer activities.

The FLC said the award recognized the excellence of work during 2012 by Paul, Sandia's president and Laboratories director, and the entire Sandia technology transfer program.

(Continued on page 2)

We heard your Voice

Sandia leadership implements measures to address concerns raised in LM Voice employee survey

By Jim Danneskiold

Employees want a clearer understanding of how their work connects to Sandia's mission and strategic objectives.

And they want to know more about how they can take an active role in fulfilling their career aspirations.

That was the overall conclusion of last year's LM Voice Survey, and Sandia management is taking action in those areas as a result, says Pam Hansen Hargan, VP for Human Resources and Communications (3000).

Response to the 2012 LM Voice employee survey was strong, with a majority (58.4 percent, or 5,369) of the workforce responding with useful ideas about areas where the Sandia is doing well and areas for improvement (*Lab News*, Oct. 5, 2012).

In addition to the higher-than-usual participation, up more than 12 percent over 2011, scores were up in all categories, including total job satisfaction and employee commitment.

See also . . .

• *Mentoring and career development: Executives engage Level 1 managers in innovative group mentoring program*

• *Don't know how to find a mentor? Want to become a mentor? The Focus on Mentoring search tool will help*

. . . on page 4

LM Voice
Powered by employees.

However, the areas the Sandia workforce rated lowest were performance management and rewards and career advancement and development, the same as in 2011.

As a result, directors and vice presidents formulated improvement actions, which were reviewed by executives for common trends and themes.

"We have some momentum going but both areas require continued, actually, constant focus," Pam says.

Two actions recently were sent to managers after consideration by the executive team:

• During performance discussions, leverage the line of sight concept or other means to help employees understand how their work contributes to Sandia's mission.

• Engage in a career discussion to gain an understanding of the employee's motivators (e.g., recognition preference), career aspiration, interest in mentoring (either engaging a mentor or being a mentor), and career support needed.

In the wake of the 2011 LM Voice survey, Human

(Continued on page 4)

National Engineers Week

To mark National Engineers Week 2013, Sandia historian Rebecca Ullrich looks back at some innovative engineering solutions developed at Sandia to aid the nation's war effort in Vietnam, leveraging capabilities used in its nuclear weapon work. Story on **page 5.**

Inside . . .

So long, Rick

Outgoing California Div. 8000 VP Rick Stulen takes "one last lap" around the Livermore campus with *Lab News* writers Patti Koning and Mike Janes and photographer Dino Vournas, sharing his thoughts on a 36-year Labs career. See **pages 6-7.**

That's that

Who can forget that opening scene in *Star Wars* (the original and best movie in the series) where the massive and ominous Imperial Star Destroyer overtakes and then captures a plucky little rebel blockade runner using a powerful tractor beam?

The beam grabbed the smaller craft in its grip and drew it inexorably, irresistibly into its voracious maw, while in the audience we sat there with our mouths open and our hands poised, unmoving, in our bags of popcorn.

By 1977, when *Star Wars* exploded like a supernova onto the cultural scene, as big as the Beatles and, for some of us, just as exciting, the tractor beam was already a staple of science fiction stories. The technology was cool, it was fun, but it was also laughably implausible. Enjoying these kinds of stories demanded - and very happily received — a willing suspension of disbelief. So you want us to buy this tractor beam thing? Sure!

But wait! The implausible seems to be moving toward becoming reality. Not in strides, perhaps, but at least in baby steps. In a letter published in *Nature Photonics*, a University of St. Andrews-led research team announced (to cite the title of their letter) "Experimental demonstration of optical transport, sorting and self-arrangement using a 'tractor beam.'" The science is complicated (to state the obvious) and the conditions making the demonstration possible were very specific and carefully controlled. And the "tractor beam" didn't take hold of a rebel blockade runner, but (as described in their letter) "suspensions of polystyrene particles of radii 410 nm, 300 nm, 800 nm, and 1,000 nm . . . " Tiny particles. Baby steps.

This got me thinking — again — about the connection between science and art. The concept of tractor beams first appeared in pulp science fiction literature in the late 1920s. According to Wikipedia, bona fide research on tractor beams began in the 1960s and has gone on, in some form or another, ever since. There have been some tantalizing results that have led, apparently, to dead ends. And now this latest development, which may or may not turn out to represent real progress.

Anyhow, I wonder: Without the concept having first been floated in science fiction, would the research community have pursued this technology on its own? Maybe. Maybe a team of scientists and engineers would have independently concluded that "A tractor beam would be cool; let's build one!" But, maybe not. Maybe they needed that spark of an idea from an ink-stained, chain-smoking, caffeine-jittered, typewriter-pounding oddball who imagined things others had never conceived of.

The world needs its dreamers and its doers. Sometimes those individuals are one and the same, and sometimes not.

Along these lines, there's a line (originally from a George Bernard Shaw play) that was invoked frequently by Robert F. Kennedy (and famously paraphrased in his eulogy by brother Ted): "Some men see things as they are and ask 'Why?' But I dream things that never were and ask, 'Why not?'"

Don't we need both: the ones who ask "why?" as well as those who ask "Why not?" I think so.

* * *

Came across a study recently that ought to spark some friendly watercooler debates. The National Survey for Student Engagement Institute out of Indiana University has released a report that ranks the college major fields of study according to how demanding they are. And the winner is — drumroll please! — engineering. In the survey, engineering students reported that they spend an average of 19 hours a week preparing for classes and doing homework, with 42 percent reporting that they spend more than 20 hours on those tasks. Physical sciences majors came in second; they spend 18 hours a week on homework/class prep. Biological sciences and arts and humanities majors reported 17 hours a week of outside study. They were followed in the survey, in order, by education, social sciences, and business majors.

All of this sounds about right to me, though I wonder if physics or chemistry, by the implication of this study, is somehow "easier" than engineering.

As an aside, I couldn't help but notice that journalism — my major — didn't register at all. That sounds about right, too.

So here's a tip of the hat to the hard science/engineering majors. But I feel compelled to argue the case for arts and humanities majors in general and specifically — since I have an affinity for the fields — English and history students. To be studied properly, both demand — demand! — prodigious amounts of reading, and I'm not talking about comic books here.

Bottom line? Getting educated ain't easy. It requires hard, hard work. Or so they tell me.

See you next time.

Bill Murphy (505-845-0845, MS1468, wtmurph@sandia.gov)

Sandia LabNews

Sandia National Laboratories

http://www.sandia.gov/LabNews

Albuquerque, New Mexico 87185-1468
Livermore, California 94550-0969
Tonopah, Nevada • Nevada National Security Site
Amarillo, Texas • Carlsbad, New Mexico • Washington, D.C.

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

Bill Murphy, Editor **505/845-0845**
Randy Montoya, Photographer **505/844-5605**
Mike Janes, California site contact **925/294-2447**
Michael Lanigan, Production **505/844-2297**

Contributors: Michelle Fleming (Ads, Milepost photos, 844-4902), Neal Singer (845-7078), Patti Koning (925-294-4911), Stephanie Holinka (284-9227), Darrick Hurst (844-8009), Stephanie Hobby (844-0948), Heather Clark (844-3511), Sue Holmes (844-6362), Nancy Salem (844-2739), Jennifer Awe (284-8997), Cathy Ann Connelly (284-7676), Jim Danneskiold, manager (844-0587)
Lab News fax **505/844-0645**
Classified ads **505/844-4902**

Published on alternate Fridays by Media Relations and Communications Dept. 3601, MS 1468

LOCKHEED MARTIN

Lab News Reader Service

The *Sandia Lab News* is distributed in-house to all Sandia employees and on-site contractors and mailed to all Sandia retirees. It is also mailed to individuals in industry, government, academia, nonprofit organizations, media, and private life who request it.

Retirees (only):

To notify of changes in address, contact Benefits Dept. 3332, Customer Service, at 505-844-4237, or Mail Stop 1021, Sandia National Laboratories, Albuquerque, NM 87185-1021.

Others:

To receive the *Lab News* or to change the address (except retirees), contact Michelle Fleming, Media Relations and Communications Dept. 3651, 505-844-4902, email meflemi@sandia.gov, or Mail Stop 0165, Sandia National Laboratories, Albuquerque, NM 87185-1468.

Employees:

To address concerns regarding delivery of the *Lab News* to your facility, call Mail Services Team 10268-4, at 844-3796. At Sandia/California contact the Mail Room at 925-294-2427.

Web users:

The *Lab News* is on the external web at www.sandia.gov/LabNews. *Lab News Interactive*, accessible on the internal web, is at: www-irn.sandia.gov/newscenter/interactive.

Paul Hommert honored by laboratory consortium

(Continued from page 1)

"Dr. Hommert has been a strong advocate for the overarching DOE strategic objectives calling for innovation to strengthen US economic competitiveness and improve the quality of life through science and engineering breakthroughs," Jackie Kerby Moore, manager of Technology and Economic Development Dept. 7933 and Sandia's representative to the FLC, said in nominating Paul for the award. "This is accomplished by maintaining a strong technology partnerships program with industry, academia, and other national laboratories."

Jackie said Paul has been instrumental in building the strategic relationships necessary to foster technology transfer and commercialization.

"Tech transfer is a Sandia mission requirement. Achieving excellence in our commercialization strategy and management is key to our strategic objectives," Paul says. "We are trusted by the taxpayers to do research and we owe it to them to be strategic about intellectual property and the role it can play in technology transfer. We want to leverage research dollars for economic growth. We have much to offer the country."

Paul says he is honored and humbled by the FLC award and what it represents. "This recognition is not just for me but for the many Sandians who work tirelessly to make the results of our research available to government, industry, and academia for the US public good."

One of Paul's priorities was to develop an Intellectual Property Lifecycle initiative, rolled out in March 2012. It promotes IP management throughout its lifecycle and asks Sandians to think about IP development, protection, and deployment — and potential industrial partners — in the early R&D phase of a project.

The IP initiative works with ongoing technology transfer programs such as the Entrepreneurial Separation for Technology Transfer (ESTT), which allows employees to leave the Labs to start up new technology companies or help expand existing ones; the Sandia Science & Technology Park, a 300-acre master-planned research park adjacent to the laboratories with 33 companies and 2,500 employees; the New Mexico Small Business Assistance (NMSBA) program, which provided Sandia technical help to 196 small companies in 2012; licensing roundtables; and cooperative research and development agreements.

Last year Sandia became an early leader in DOE's Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Initiative, which enables small companies to use the SBIR/STTR funding mechanism to leverage technology developed at DOE national laboratories. Also in 2012, Sandia held its first annual Research & Technology Showcase featuring cutting-edge technology and providing information on doing business with the Labs.

And Sandia's Intellectual Property Management, Alliances and Licensing Department is taking part in the White House's Startup America Initiative to give young companies quick, affordable license option agreements.

Tech transfer at Sandia produced royalty receipts of $4.48 million in fiscal year 2012, a Labs record. In fiscal years 2011 and 2012, Sandia won eight R&D 100 awards, five FLC national awards and seven FLC regional awards.

Peter Atherton, senior manager of Industry Partnerships Dept. 7930, says Paul has provided leadership and personal involvement in the Labs' technology transfer efforts. "He opened the first Sandia Science & Technology Showcase event that attracted nearly 400 people," he says. "This award is especially timely considering Paul's kickoff of the IP Lifecycle initiative. We were very proud to nominate him."

The awards ceremony will be April 25 at the FLC national meeting in Westminster, Colo.

The FLC is a nationwide network of more than 300 members that provides the forum to develop strategies and opportunities for linking laboratory mission technologies and expertise with the marketplace.

The FLC Awards Program annually recognizes federal laboratories and their industry partners for outstanding technology transfer efforts. Since its establishment in 1984 the FLC has presented awards to nearly 200 federal laboratories, becoming one of the most prestigious honors in technology transfer.

It's bowl time — Science Bowl, that is!

By Patti Koning

The Ravens may have run off with a Superbowl XLVII ring, but bowl season is far from over. The DOE Science Bowl is in full swing, with more than 14,000 middle and high school students competing in regional events to earn a spot at the national event in April.

At the Sandia-sponsored regional Science Bowl on Jan. 26 in Livermore, Mission San Jose High School of Fremont, Calif., edged out Dougherty Valley High School of San Ramon by two points with time expired after correctly answering the final bonus question. Mission San Jose will be among the approximately 70 high school teams participating in the DOE National Science Bowl in Washington, D.C., April 26-29.

The teams that finish in the top of the DOE National Science Bowl win money for their school science departments, gift certificates, and for the top two high school teams, educational trips. In the 2012 DOE National Science Bowl, the first place high school team won a trip to Alaska and the second place team won a trip to Yellowstone and Grand Teton national parks.

Great prep for college environment

But just participating in the Science Bowl brings its own rewards. Jason Black, son of Ken Black (8123) and a former Sandia intern, was on the Science Bowl team at Granada High School in Livermore in 2002. For Jason, the Science Bowl was a great opportunity to compete in academics.

"I enjoyed the chance to hone my skills and compete against other talented students in a friendly, academic contest," he says. "I think the Science Bowl is a great opportunity for those interested in science to strengthen their knowledge of topics that interest them and enjoy the team environment that is part of the contest. It's also a great preparation for group study and activities they will encounter in college."

Eight Sandia/California staff members tried the event for themselves in a mock-Science Bowl held in the DISL Café area to recruit volunteers for the Sandia/California-sponsored events.

"The questions were difficult, either in that they were obscure or required fast mental math, which apparently is not a forte of mine anymore. I was happy when we finally got one question correct," says Thomas Reynolds (8252). "I imagine part of the fun comes in studying for the competition, when students might experience whole areas of study that they were not aware of and that really interest them."

Dean Williams (8945) has been a Science Bowl volunteer for 20 years and coordinates the regional high school event in Livermore. He helped Ray Ng (now retired) start the Sandia/California Regional Science Bowl for high school in 1992, the year after the DOE National Science Bowl began.

"I firmly believe that the Science Bowl, and other science competitions, are fun motivators for the students in middle and high schools in the United States that encourage students to continue their education and make science a career," he says. "This is imperative if we as a country are to continue to be a nation of innovators. We need the Science Bowl to challenge young people to be the best they can be in whatever areas of science appeal to them."

Ray is one of the strongest advocates of the Science Bowl. He was instrumental in starting the five regional Science Bowls in the San Francisco Bay Area (three high school and two middle school), plus two additional regional Science Bowls in Hawaii and at the Jet Propulsion Laboratory in Pasadena, Calif. Ray now directs the California West South Bay Area Regional Science Bowl.

Other winners will be determined at regional Science Bowls taking place all over the country through early March. Sandia sponsors a middle and high school regional Science Bowl in both Livermore and Albuquerque.

Putting on these events is no easy task, as 50 to 75 volunteers are needed for each and some of the volunteer positions, moderators, and scientific judges in particular require scientific knowledge and training.

ARE YOU TOUGH ENOUGH FOR THE SCIENCE BOWL? Eight brave staff members put themselves to the test in a mock-DOE Science Bowl held in the DISL Café area at Sandia/California. From left to right, Joe Ronevich (8252),Lauren Hughes (8252), Thomas Reynolds (8252), Alan Kruizenga (8223), Kranthi Mandadapu (8365), Jonathan Lee (8365), Myra Blaylock (8365), and Jeremy Templeton (8365). (Photo by Jeff McMillan)

Upcoming Regional Science Bowls

High School

New Mexico Regional Science Bowl (Albuquerque Academy), Feb. 16
Contact: Cheryl Garcia, cagarci@sandia.gov

Middle School

Sandia/Las Positas Regional Science Bowl (Los Positas College, Livermore), Feb. 23
Contact: Martha Campiotti, 294-2998, mmcampi@sandia.gov

New Mexico Regional Science Bowl (Albuquerque Academy), March 2
Contact: Cheryl Garcia, cagarci@sandia.gov

California West South Bay Area Regional Science Bowl (Moffett Field, CA), March 2
Contact: Ray Ng, 510-483-4491, RayNg97@gmail.com

Sandia CaliforniaNews

Economic impact

(Continued from page 1)

Sandia reaches out to local businesses through a variety of programs. It holds public forums with suppliers and civic leaders to discuss contracting opportunities, and lists contracts on its Business Opportunities website. It supplies small and diverse business owners with information on doing business with Sandia and seeks qualified suppliers.

The 2012 *Sandia National Laboratories Economic Impact on the State of New Mexico* report breaks down Sandia's spending and spotlights its role in the state's economy. The 2012 data is based on Sandia's fiscal year beginning Oct. 1, 2011, and ending Sept. 30, 2012. The report reflects Sandia's continued commitment to small business.

Here are some numbers showing Sandia's overall economic impact in 2012:

- $1.4 billion was spent on labor and non-contract-related payments.
- $896.3 million went to contract-related payments.
- $66.4 million was sent to the state of New Mexico for gross receipts taxes.
- $65 million was spent through procurement card purchases.

The Small Business Act mandates that federal contractors use small businesses, including those that are small disadvantaged, owned by women or veterans and service-disabled veterans, and small businesses in impoverished areas — called Historically Underutilized Business (HUB) zones. The Small Business Utilization Department oversees the mandate and negotiates small business subcontracting goals with NNSA.

"Our goal for small disadvantaged businesses will double from 5 percent in FY12 to 10 percent in FY13," Don says. "We have increased our woman-owned small business goal from 10 percent to 11 percent, our veteran-owned small business goal from 3 percent to 4 percent, and our service-disabled veteran-owned small business goal from 2 percent to 3 percent.

"The entire procurement organization, including my small business team, is driven to achieve these tougher goals by providing New Mexico small business suppliers with increased contracting opportunities at the Laboratories and by continuing to implement innovative, transparent, and relevant work processes and approaches."

While Sandia's Procurement organization stewards small-business contracting opportunities, Sandia President and Laboratories Director Paul Hommert echoes the Labs' full support of the Small Business Act. "Sandia National Laboratories has a long and distinguished record of encouraging and partnering with highly qualified, diverse small business suppliers who assist us in achieving our national security mission," he says. "We are fully committed to continuing this track record."

Sandia's total small business expenditures for fiscal year 2012 and New Mexico breakouts:

	National	New Mexico
Total small businesses:	$472,732,000	$255,920,000
Woman-owned small businesses:	$113,381,000	$91,285,000
Businesses in impoverished areas (HUBZone):	$11,707,000	$4,600,000
Small disadvantaged business (SDB)	$83,783,000	$68,827,000
Business owned or co-owned by socially and economically disadvantaged person 8(a):	$36,354,000	$31,091,000
Veteran-owned small businesses:	$51,977,000	$14,364,000
Service-disabled, veteran-owned small businesses (SDVOSB):	$16,591,000	$1,759,000
Small business (non-minority, non-woman, non-veteran owned)	$158,939,000	$43,994,000

"We value the relationships forged with our current small business suppliers and within the New Mexico business community and look forward to developing new and enduring partnerships as we go forward," Don says.

Sandia also helps the state's economy through the New Mexico Small Business Assistance (NMSBA) program, established by the state legislature in 2000 to help companies receive technical support from the Labs. In 2011, the Sandia NMSBA program provided nearly $2.4 million in technical assistance to 194 New Mexico small businesses in 22 counties. Since 2000, it has provided more than $22.2 million in assistance, according to the report.

The 33 companies in Sandia Science & Technology Park, a 300-acre master-planned research park adjacent to the Laboratories, employ about 2,500 people at an average annual wage of $74,949. Investment in the park is more than $351 million. Since it opened in 1998, the park has generated $1.89 billion in spending on taxable goods and services and contributed $73.4 million in gross receipts taxes to the state and $10.4 million to the city.

Sandia employees gave more than $4.6 million in 2011-2012 to the United Way of Central New Mexico as the largest corporate contributor to the agency. That number jumped 17.1 percent to $5.5 million in the 2012-2013 Employee Caring Program campaign, and will be reflected in the 2013 economic impact report.

Sandians logged more than 100,000 volunteer hours in 2012. And they donated more than 2,500 books, a truckload of school supplies, 450 holiday gifts, and 500 pairs of new shoes to disadvantaged kids in the community in 2012.

Mentoring and career development

Executives engage Level 1 managers in innovative group mentoring program

We are all mentors.

We all have experiences and knowledge we can share, something that will help a colleague develop in his or her career.

And we are all mentees, as well. Mentoring is a key element of Sandia's learning strategy. The very nature of the workplace ensures that we will learn from others, from those whose own experiences have prepared them for situations that are new to us. Those kinds of relationships constitute the kind of real-world, effective, informal mentoring foundation that you'll find in every workplace, says Karen Gardner, Director of Human Resources.

Sandia encourages mentoring relationships but also proactively supports formal mentor/mentee relationships that help individuals focus on specific development needs, while ensuring that critical knowledge is shared and passed along. Both formal and informal mentoring relationships are essential to professional and personal development and make for a stronger Sandia.

Kim Sawyer, Sandia's Deputy Labs Director and Executive VP for Mission Support and Sandia's Executive Champion for Mentoring, says, "Whether you're a mentor or a mentee, sharing knowledge and skills for professional growth and development is invaluable. Mentoring is particularly important here at Sandia where we have such a critical national security mission . . . . I believe strongly that mentoring is vitally important and it supports our strategic objective No. 5, which is to commit to a learning, inclusive, and engaging environment for our people."

A PANEL DISCUSSION at one of six Executive Roundtable Mentoring sessions featured VPs, from left, Jeff Isaacson (5000), Bonnie Apodaca (10000), Steve Rottler (8000), Becky Krauss (11000), Mike Hazen (4000) , and Pam Hansen Hargan (3000). Participants in the pilot said they really appreciated the engagement with senior management. (Photo by Randy Montoya)

PARTICIPANTS in the Executive Roundtable Mentoring pilot program got first-hand insights into how Labs executives deal with the toughest issues. (Photo by Randy Montoya)

Executive Roundtable Mentoring

Mentoring isn't necessarily a strictly one-on-one relationship. In fact, one of the more innovative recent efforts in formal mentoring was based on building group-to-group relationships. The Executive Roundtable Mentoring (ERM) pilot program, which wrapped up in December, brought together 50 Level 1 managers with members of Sandia's senior leadership. The roundtable provided a forum within which executive leaders shared their knowledge and experiences with the participants. In addition to fostering knowledge-sharing, the roundtable was also designed to leverage diversity and enhance networking opportunities and engagement.

Pam Hansen Hargan, Human Resources and Communications Div. 3000 VP and a key champion of the program, says this form of mentoring is very exciting. "We really expand the learning and outreach," she says. "All participants hear the same message and advice from executive leaders regarding leadership competencies essential to meeting our strategic objectives. The program was so well received and successful that we plan to expand it in 2013."

In a letter inviting a select group of managers to participate in the pilot, Sandia President and Labs Director Paul Hommert noted that "The very nature of the program and your selection to participate in it are directly relevant to our Strategic Objective No. 5: 'Commit to a learning, inclusive, and engaging environment for our people.'"

Paul helped launch the ERM, speaking on the topic of leadership at the first of six sessions that formed the framework for the program. In that first session, held last May, then-VP Rick Stulen discussed customer relationships, and an executive panel headed by Kim addressed leadership issues and mission success. In five subsequent sessions, held every few weeks through the end of the year, VPs and directors addressed a variety of topics: Inclusion Drives Innovation; Political Savvy; Performance Management; Trust-based Relationships — Building Loyalty and Commitment; and, Leading Change.

In addition to those formal sessions, each participant was teamed with a mentor, a Level 2 manager with whom they could discuss the topics of the sessions to gain a better grasp of the imparted knowledge and wisdom. Participants were then asked to conduct "teach-backs," passing along the lessons learned to members of their own teams.

Those teach-back sessions, says Joan Luciano, manager of Talent Management and Employee Engagement Dept. 3502, reached more than 600 Sandians. "The concept and Pam's vision going into this was we would expand the learning opportunities beyond the immediate participants."

Overall, the ERM pilot earned glowing reviews, with an overall satisfaction rating of 4.5 out of 5.

"It was very exciting to see the high level of engagement from both participants and executive leaders throughout the program," Pam says.

Ruth Harris (9544), one of the managers selected to participate in the pilot, found it to be extremely useful.

"The primary benefit I gained from participating," Ruth wrote recently in an email, "was being able to experience a rich learning process by hearing perspectives and insight from our executive management concerning the issues they have faced as leaders. The fruitful part for me was hearing how they approached or dealt with different situations. An added benefit was meeting with my mentor, Dahlon Chu (5330), who was applying the concepts real-time with issues I was facing."

'Relevant, rich, and rewarding'

The Executive Roundtable Mentoring program, Ruth added, "is a type of learning that is relevant, rich, and rewarding. You are interested and engaged from the outset. ERM provides a unique venue that I believe can be offered as a learning and mentoring opportunity at the different levels of leadership at the Labs."

Another participant, Bridget McKenney (5718), says that as a relatively new Sandian, she found the ERM program to be an excellent vehicle for meeting and networking with fellow managers from centers across the Labs.

"I intend to maintain many of these new relationships, using them to help me better understand our culture and diversity of management thinking," Bridget says. "I also found most of the topics to be 'spot on,' both with my personal growth as a manager, as well as with the larger management community needs. Finally, the opportunity to engage with a panel of VPs on these topics gave tremendous insight into lab management philosophy and focus."

Working closely with John Zepper, Director of Information Technology (9300), and his team, on January 31 a web-based mentor match tool was deployed to help match mentors and mentees and track mentoring partnerships (see "Don't know how to find a mentor? . . .", below). "We now have a range of mentoring resources that demonstrate our heightened emphasis on knowledge-sharing and career development," says Karen.

"Through LM Voice, we heard from our employees that they want more career development help from leaders, so we've stepped up by focusing on mentoring and providing career-related resources for both employees and leaders," she says. "After all, it's a partnership, and the employee should play an active role in his or her own development.

"When you look at the demographic changes we're seeing, with a lot of talented new people coming in, and with knowledgeable and experienced people retiring, it's essential that we take mentoring seriously," says Karen. " Mentoring is a way of preserving our legacy and building a laboratory for the future."

We heard you!

(Continued from page 1)

Resources rolled out tools that provided more career development information and gave managers additional career information. Recent enhanced mentoring efforts and the Focus on Mentoring search tool (see accompanying story above and the sidebar story at bottom right) are additional ways to help managers and their staffs chart the best career paths at Sandia.

Making career decisions is easier if employees know Sandia's mission and strategic direction, Pam says, because if you know the Labs' goals, you can use the performance management process and career discussions to align your work with those goals.

"Employees are asking their managers: 'Help me understand how my work connects to Sandia's mission,'" Pam says.

By "line of sight," she says, HR professionals mean the need for managers to provide key information that demonstrates how the individual's daily work has a very real impact on larger Sandia goals. That should be the core of the performance management process, she adds.

Just as employees link their performance objectives to their managers' objectives, there needs to be a connection for every Sandia employee between what they do each day and the Labs' five Strategic Objectives.

The need for career development efforts is the other side of the same coin, Pam says.

Human Resources Business Partners and managers throughout the Labs have reported that managers and employees are having more discussions about careers and how work contributes to Sandia's mission since the 2011 survey, but the 2012 survey results show that more needs to be done.

"Employees should hold managers accountable by raising issues that affect their career aspirations," Pam says.

Managers need to take an active role in learning individual career goals and what makes them want to do a great job — whether it's money, promotions, national service, or some combination of these and other factors, she says.

"I think it's simply the need to engage in a straightforward discussion with straightforward goals," Pam explains. "What is important to you? What motivates you?"

Don't know how to find a mentor? Want to become a mentor? The Focus on Mentoring search tool will help

From career planning to skill development, mentoring is something that can benefit everyone. What's important is to find a mentor who has the right characteristics and skillsets to help you achieve your development goals.

Sandia's Focus on Mentoring search tool will make finding a mentor easier. It enables you to search for potential mentors using criteria such as education, skill sets, or experience. Once you have a list of potential mentors, feel free to contact them to explore if and how they can help you meet your development goals. Watch the *Sandia Daily News* for upcoming announcements.

Interested in helping someone else succeed or in engaging in a partnership where you can exchange ideas? Think about becoming a mentor. Start today by going into your My Site profile, clicking on the Edit My Profile link and completing the "Ask Me About," "Past Projects," "Schools," and "Skills" sections. Then, scroll down to the very bottom and check the "Want to be a mentor" box. Once you volunteer, people interested in mentoring will be able to find you using the Focus on Mentoring search tool.

For more information, contact Shelby Green at 505-284-8030.

Engineering solutions for the Vietnam warfighter

Labs leverages weapons work to address urgent wartime needs

In the 1960s, there was a hot corner of the Cold War: In Vietnam, the US clashed with communist forces supported by the Soviet Union and the People's Republic of China.

Story by Sandia historian Rebecca Ullrich • Photo research by archivist Myra O'Canna

SANDIA DEVELOPED terradynamic, air-dropped sensors, examples of which are being loaded here on an F-4 aircraft for testing.

The nation's military, familiar with and deeply respectful of Sandia's expertise honed in the previous decades of nuclear weapon component design and testing, approached the Labs with a new request: Could Sandia, this uniquely capable and multifaceted laboratory, develop technologies that might help in the war in Vietnam? Sandia said yes, rolled up its sleeves, and went to work — as usual.

While the Labs became involved in several areas of warfighter support at that time, two technologies emerging from the period are notable: seismic intrusion devices (SID) and fuel air explosives (FAE). Those technologies, in particular, reveal the intersection of several historical trends, including Sandia's pursuit of work beyond the core nuclear weapons mission; the increasing number of spin-offs from that core; DoD's pursuit of technology for a new kind of warfighting; and the wartime emphasis on quick results.

The SID and FAE work both started small, segued from ongoing research efforts, and saw Sandia stepping into an existing body of research.

Seismic Intrusion Devices

In November 1964, H. H. "Pat" Patterson was reviewing project progress on part of the Vela program with DoD's Advanced Research Project Agency (ARPA) director, R. L. Sproull, when Sproull mentioned his concern with the problem of infiltration of North Vietnamese troops into the South.

SENSOR TEAM — Tom Sellers, left, and Jim Scott outside an American base in Vietnam. Tom, Jim, and other Sandians went to Vietnam to demonstrate prototype sensors to combat units.

Vela was an ARPA-sponsored, multi-entity, two-pronged nuclear test detection effort — satellites to detect atmospheric detonations and seismic sensors to detect underground shots. Pat worked on the underground effort. Known as the Unmanned Seismic Observatory, the goal was to create unattended stations with sensors recording seismic events. Sandia was developing the sensors, but Pat and crew were picking up a lot of footfall and traffic with the devices. Thinking his team's problem might offer a solution to one of ARPA's challenges, Pat wrote to Sproull.

In 1965, ARPA asked for and received the Atomic Energy Commission's authorization for Sandia to participate in the counterinsurgency research and development effort. Some $350,000 was allocated for a one-year study of SIDs, including development of any promising designs. There were sensors already in use in the war — these were hand-placed geophones with information transmission via cables. Sandia's first designs focused on the information transmission problem. The resulting SID was a sturdy geophone with a radio link and data storage capabilities. Hand-implanted, it would operate for about 45 days, sending its signals to a receiver at a ground location or in an aircraft. Extensive testing verified that the signal would make it through the thick jungle canopy prevalent in some areas of Vietnam. Field trials in April 1966 satisfied the observers and the project evolved into a 5-year, $10 million effort.

SID capabilities improved as Sandia leveraged its expertise in terradynamics to develop a ballistic shape that could be air-delivered and descend into the soil, leaving its antenna exposed. Information storage designs for the Vela satellite program similarly fed information capture and transmission for the sensors. And an acoustic capability was added. By 1969, there were 11 different SID designs. To avoid tangling of the sensors as they were dropped from aircraft, for example, the rim that served as a brake was retracted during flight.

Procurement efforts for the air-dropped sensor began in January 1967. Sandia's familiarity with suppliers making similar components sped up production and they were deployed in October. Later, they were dropped along trails and around US encampments to enhance intelligence on North Vietnamese troop movement and threats. They were judged successful, if not hugely influential on the overall outcome of the war. Sensors became an entire Sandia line of business, an example of the increasing the breadth and depth of the Labs' capabilities.

Observing National Engineers Week Feb. 17-23, 2013

In what has become something of a tradition for the *Lab News* to mark National Engineers Week (this year, it's Feb. 17-23) Sandia historian Rebecca Ullrich takes a look back at key engineering solutions developed by Sandia to address the nation's most daunting technical challenges. This year, Rebecca writes about some important technologies developed or refined at Sandia to support the nation's war effort in Vietnam.

Engineers Week 2013 February 17–23

The national theme for Engineers Week this year is "Celebrate Awesome," which seems fitting for engineering, the work of which can be awe-inspiring but is also taken for granted, embedded as it is in the world around us. It is good to pause and notice.

Fuel Air Explosives

In 1966, Sandia was asked to conduct a study of FAE for weapon use. Research on FAE feasibility extended back to the early 1960s, focusing on the potential detonation of a fuel-air mix in a dispersing cloud. Sandia provided an extensive understanding of both shock wave and detonation, conducting research on blast effects, alternative fuels, detonation, fuel dispersal, and cloud shaping. The Labs' test capabilities, particularly at Bill Benedick's 9920 explosive test site, were critical. Additional phases of the effort extended the research into 1970.

In 1968, the Air Force asked Sandia to undertake a quick-response FAE program based on an existing design. Called Pave Pat, the project delivered 50 bombs to Vietnam that same year. As a crash project, it used an existing deceleration-dependent fuze that did not perform as well as desired. Sandia returned in 1971 with 75 Pave Pat bombs with a redesigned fuze and a different fuel. They provided successful demonstrations of reliability and efficacy, but were not pursued.

IN 1977, INVENTORS of a nonviolent explosive destruct system (NEDS), Charlie Daniel and Bill Benedick (both 5131), were informed that the concept was awarded a patent by DOE.

Sandia continued studies of fuel-air mixtures and the acceleration of flame into detonation, but did not directly address FAE again until the mid-1980s under Balanced Technology Initiative sponsorship. Not driven by wartime deadlines, this work focused on consolidating research results and building a strong technological base before the program ended in the early 1990s.

Sandia sent staff members to Vietnam for both the sensor and FAE programs. Rick Beasley described them as "human manuals," there to train military staff. Rick and Paul Langdon were injured on one trip when a grenade was thrown into their tent. Staff demonstrated how the technology worked and its potential uses, receiving strong praise from the military and reinforcing Sandia's reputation as a go-to lab for reliable, research-based engineered responses to technological needs.

A last lap with Rick Stulen

Story by Patti Koning and Mike Janes • Photos by Dino Vournas and Randy Wong

Departing Div. 8000 VP Rick Stulen reflects on his 36-year career at Sandia, most of which was spent at the California site. (Photo by Dino Vournas)

Few people are as intimate with the California laboratory as departing Div. 8000 VP Rick Stulen.

He spent 32 of his 36 years with Sandia here, playing a key role in many of the pivotal changes at the site, like the creation of the Distributed Information Systems Laboratory and Livermore Valley Open Campus. And anyone who knows Rick is familiar with his habit of walking on the site's trails at lunchtime and any time he needs to clear his head or take a break. So it was fitting that for his farewell interview, Rick led *Sandia Lab News* reporter Patti Koning, public relations officer Mike Janes, and photographer Dino Vournas on a whirlwind tour that covered Rick's history, Sandia/California's milestones, and the site's future.

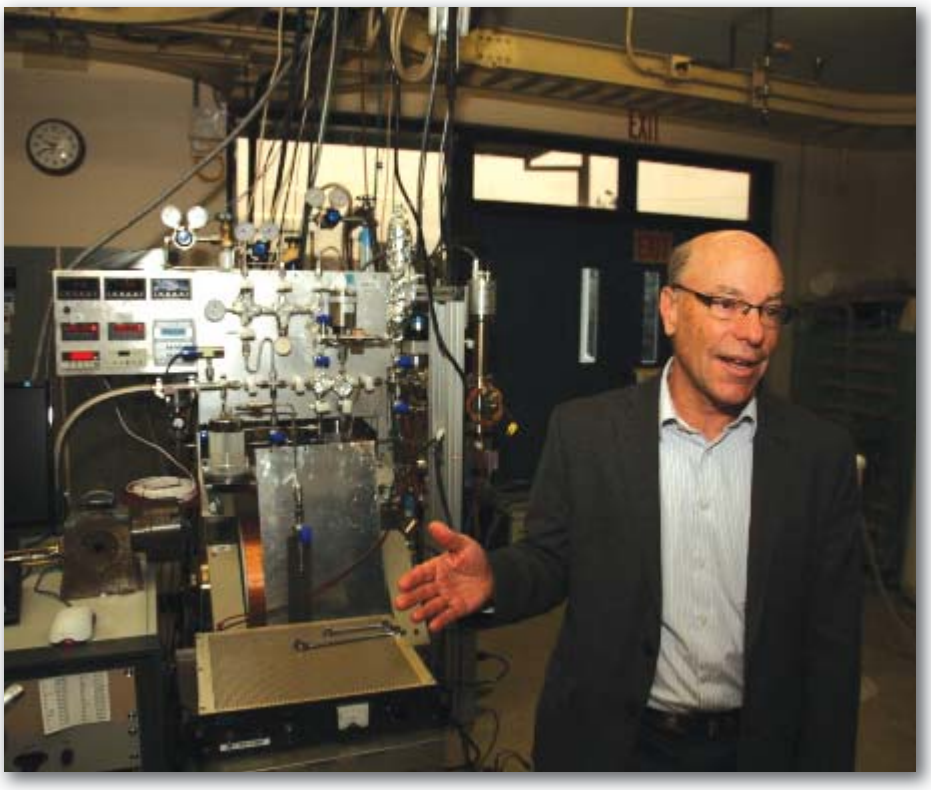
Rick came to Sandia/California in 1976, fresh out of Purdue University, where he earned a PhD in solid-state physics. His career highlights include his work on the Strategic Defense Initiative in the 1980s and his leadership of the Extreme Ultraviolet Lithography (EUVL) program, an industry-funded $300 million three-lab Cooperative Research & Development Agreement (CRADA), in the 1990s.

Rick believes the skills he developed to successfully partner with Lawrence Livermore and Lawrence Berkeley national laboratories and industry partners were essential to the success of the LVOC as well as more recent industry partnerships, such as the CRADA with Cool Earth Solar, which will be on the LVOC grounds. In his tenure as Div. 8000 VP, he lists the LVOC as one of his most proud accomplishments, along with the safety culture, the growing attention to diversity and inclusion, and hiring — in four years, nearly 500 people have been added to the rolls at the site.

Looking ahead, he believes the strength of the nuclear weapons program will keep the site thriving for another decade. At the same time, the site needs to be ready to transition to a different kind of future that will include expanding the Combustion Research Facility well beyond the transportation sector and continuing to develop a unique and differentiating cyber capability.

On a more personal note, Rick plans to focus on rebalancing his life in retirement. That will include more cycling, running, and yoga, time with his grandkids, and being deliberate and thoughtful in any advisory boards or other roles he might take on.

"What I am going to miss most is the people," he says.



"I spent my formative years at Sandia in this lab. When the news broke about cold fusion, Barry Hess and I spent 12 hours analyzing the news footage and setting up experiments to see if we could replicate the results." (Photo by Dino Vournas)

"This is the first fully integrated EUVL camera. The precision and accuracy is beyond belief, into the sub-nanometer regime. People said it couldn't be done." (Photo by Dino Vournas)

"The LVOC is a game-changer for the site. It will provide an opportunity for growth in ways that have never been possible before. This will be the front door to the laboratory and it's going to be amazing to see what happens here." Behind Rick is the first Cool Earth Solar demonstration unit. (Photo by Dino Vournas)

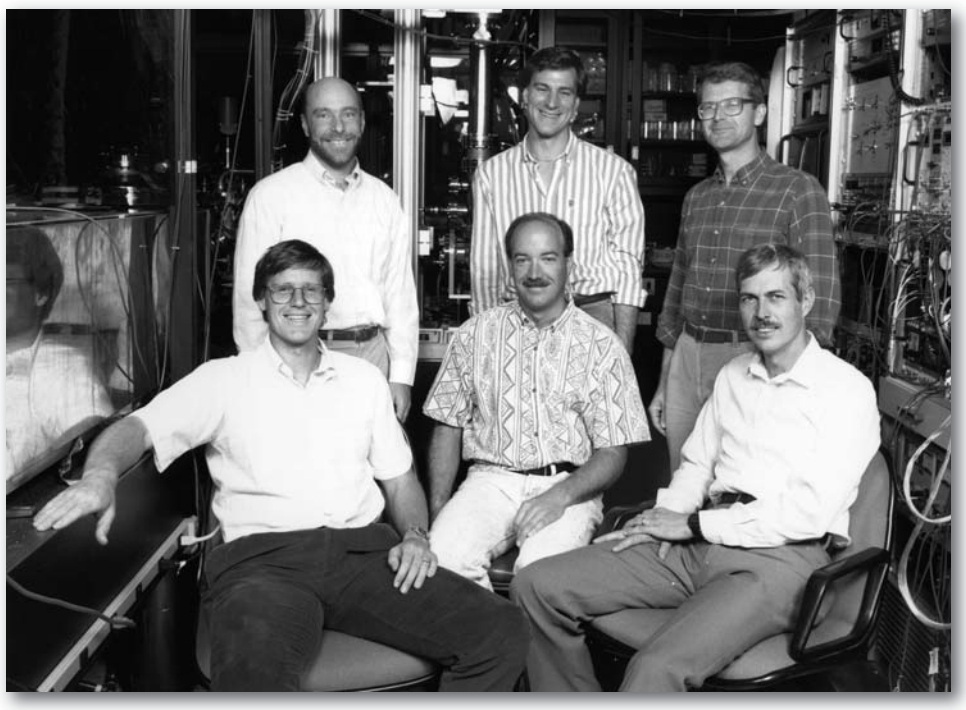
"I'm so proud of the CRF and what it has done for the nation. It is absolutely true that there is not a car on the road today that hasn't benefitted in some way from the work done here." (Photo by Dino Vournas)

"I was here when this facility was built in the 1980s. When I became director of then-8700 (materials science), John Goldsmith helped me rename the facility from the Integrated Management Technical Laboratory to the Micro and Nano Technologies Laboratories. He came up with the term 'MANTL.'" (Photo by Dino Vournas)

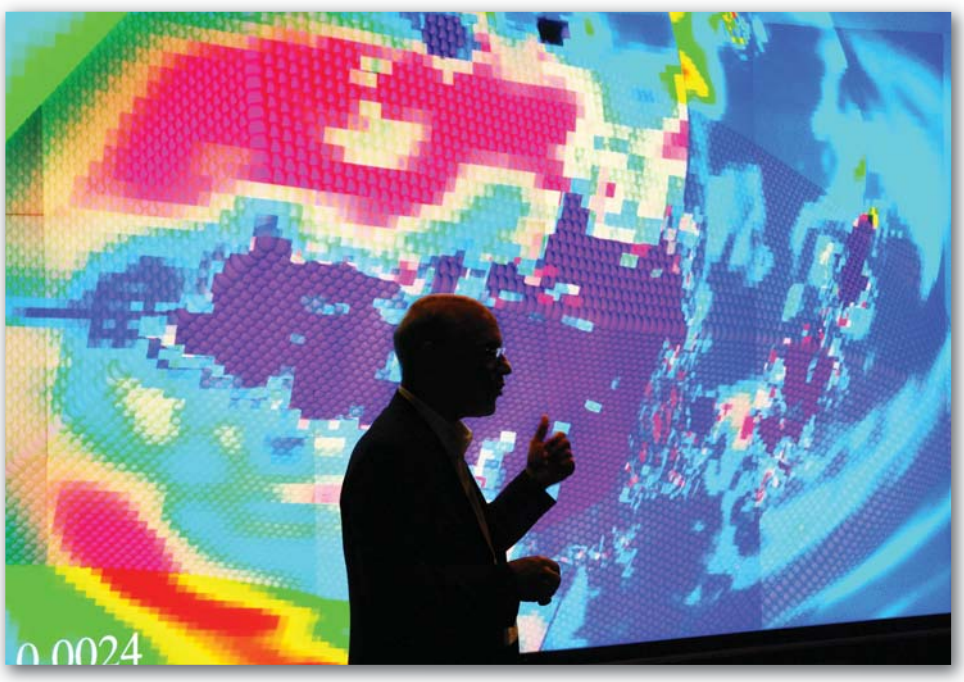
"What I am going to miss most is the people."
— Rick Stulen

Sandia CaliforniaNews

Rick, right, speaks with guests during his retirement party. From left to right, Tom Felter (8252), Bill Wolfer (retired), and Wen Hsu (8128). (Photo by Randy Wong)



RICK AND EUVL TEAM — Front row: Glenn Kubiak, Steve Haney, and Dan Tichenor; Back row: Rick Stulen, Kurt Berger, and Mike Malinkowski.



In this photo from 2007, then-Div. 1000 VP Rick Stulen discusses the power of computer simulation and visualization with members of the news media during a formal media visit to the Laboratories. (Photo by Randy Montoya)

Honoring a commitment to the Guard and Reserve

When Patricia Salazar's New Mexico Army National Guard unit was deployed to Kosovo for a year-long tour in 2011, she left behind family, friends, and colleagues in Sandia's emergency response organization. Thanks to what Pat calls "extraordinary support," what could have been an awkward and difficult personal situation for her was actually smoother and easier than she could have hoped.

So impressed was she with the way her management team, including manager Eugene McPeek, as well as Sandia and Lockheed Martin, handled the logistics related to her deployment and subsequent reintegration into the workplace that she nominated Eugene (4236) for a Patriot Award, presented by the New Mexico Employer Support of Guard and Reserve (ESGR). The award recognizes supervisors and bosses nominated by a Guardsman or Reservist employee for support provided directly to the nominator.

Says Pat, "Lockheed Martin gave me 500 hours of donated leave and I received above-and-beyond assistance from Sandia's HR division, the Badge Office, Security, and internal and external administrative support from everyone prior to my deployment, in preparation, and again upon my return."

As a Sandia first responder, Pat is used to having colleagues watch her back on the job. What was remarkable, moving, and unforgettable, she says, was how they kept her covered when she was overseas. Remember that big freeze in February 2011, the one that broke water lines all over the state? Pat won't forget it, or what her teammates did for her.

"My pipes broke and my home flooded," she recalls, "and the ERT team was instrumental in removing the standing water and basically saving my second story, staircase, and walls. They were at the airport to greet me on my return from Kosovo and assisted with storage moves and other issues during the rebuilding of my home." You don't find coworkers and friends like that just anywhere, Pat says.

Her return to work "has been a smooth transition back and I truly appreciate everyone's efforts on my behalf to make this possible," she says.

ABOVE AND BEYOND SUPPORT — Pat Salazar, center, stands beside her manager, Eugene McPeek, whom she nominated for the New Mexico Employer Support of Guard and Reserve Patriot Award. Also pictured are New Mexico Army National Guard Major Todd Kontny, left, New Mexico Air National Guard Brig. Gen. Judy Griego, and, at right, Ernest Rodriguez of New Mexico ESGR. (Photo by Randy Montoya)

Sandia is also being considered for the 2013 Secretary of Defense Employer Support Freedom Award, which is the highest recognition given by the US government to employers for outstanding support of employees serving in the Guard and Reserve. Each year, Guard and Reserve employees, or a family member acting on their behalf, can nominate their employer for the Freedom Award.

Sandia Lean Six Sigma efforts realize $34 million in cost savings and avoidances in FY12

A million here, a million there, as the saying goes, and pretty soon you're talking real money.

Well . . . Sandia's 55 Lean Six Sigma (LSS) Black Belts in FY12 led 228 LSS activities across the Labs that resulted in cost savings and cost avoidances of more than $34 million. And that's real money.

Applying a wide variety of proven LSS principles and tools to eliminate waste and variation, the Black Belts and their teams, champions, and sponsors, made a significant difference at the Labs through the improvements identified and implemented during the activities.

Sandia's LSS corporate office recently held its second annual Financial Impacts awards ceremony to recognize LSS teams for notable accomplishments in two categories, Cost Avoidance and Cost Savings.

Here are brief descriptions of the top teams and how they contributed to mission success:

Cost Avoidances

First place: W88 ALT Design Trade event, $26 million in cost avoidances

The proposed W88 Alt design required a significant number of unique Application-Specific Integrated Circuits (ASICs) and HBT components that affected the initial cost estimates. This project used a teaming approach with Design & Production representatives to identify 51 trade options. Several of those trade options were realized, resulting in significant cost avoidance for the NNSA and DoD customers.
The champion was Doug Mangum (5350), sponsor was John Moser (5352), and the Black Belt was Dee Dee Griffin (2551).

Second place: Foreign National Processing Value Stream Analysis, $4.8 million in cost avoidances.
The champion was Terri Lovato (4240), sponsor was Ruth Harris (9544), and the Black Belt was Rick Sherwood (711).

Third place: Electronic Neutron Generator Change Effects Analysis, $609,000 in cost avoidances
The champion was Cliff Renschler (2730), the sponsor was Neil Lapetina (2732), and the Black Belt was Tina Hernandez (2734).

Fourth place: MC4682 Capacitor- Redefining Short-Time Breakdown Lot Acceptance Requirements, $211,000 in cost avoidance.
The team was championed by Mike Daily (1730), sponsored by Frank Loudermilk (1736), and led by Don Lifke (1736), Master Black Belt.

Cost Savings

First place: Div. 6000 Product Development Kaizen (PDK) for Financial Administrative Practice for Division Support, $2 million in cost savings.

The Division indirect financial model recently was redesigned and therefore did not have a standardized lifecycle management approach for budget generation and execution. Ad hoc processes were creating re-work and complexity in communication.

The PDK team developed Division 6000's Guideline for Division Support Indirect Budget, a documented process that did not previously exist. This new process made it possible to reduce the division support budget from FY12 to FY13 by $2 million without increasing rate.

The team also developed and deployed a division support communication strategy.

The champion for this event was Div. 6000 VP Jill Hruby, the sponsor was Todd Hunter (10660), and the Black Belt was Carla Forrest (10661).

Second place: Integrated Stockpile Evaluation Business Enterprise Team Unification Kaizen Event, $152,000 in cost savings.
The champion was Corey Cruz (2950), sponsor was Bernie Gomez (2957), and the Black Belt was Nicolette Bauer (10629).

Third place: On-Wafer Test Value Stream Analysis, $61,000 in cost savings.
The champion/sponsor was Charles Sullivan (1742) and the Black Belt was Jascinda Clevenger (1742)

4th place tie: Yield loss, $50,000 in cost savings
The champion was Tim Gardner (2710), sponsor was Lorraine Sena-Rondeau (2719), and the Black Belt was Ray Shankles (711).

4th place tie: Electronic Neutron Generator (ELNG) production floor layout event, $50,000 in cost savings.
The champion/sponsor was Neil Lapetina (2732) and the black belt was Margaret Sanchez (2718).

* * *

Maria Galaviz (manager, 0711) and Pam McKeever (senior manager, 0710) presided over the awards ceremony. In addition to congratulating the winners, Pam remarked on how important these activities were in supporting the Laboratories' overall affordability goals.

Maria concluded the ceremony by thanking all the participants for their outstanding support of the Sandia LSS program commitment to continuous improvement.

To learn more about the LSS program contact Maria Galaviz at 284-9507.

UMass Lowell names Kim Sawyer an honored alum

By Nancy Salem

HONORED ALUM — From left, Deme Gys and Mark Hines of the University of Massachusetts Lowell came to Sandia to visit alums Kim Sawyer, deputy Laboratories director and executive VP for Mission Support, and Bill Rhodes, senior manager of International Security Systems Dept. 6810. Gys and Hines brought along the news that Kim had been given a 2013 UMass Lowell Alumni Award. (Photo by Randy Montoya)

Kim Sawyer says her studies at the University of Massachusetts Lowell, where she earned a master's degree in mathematics and computing, were instrumental in shaping her career.

So Sandia's deputy Laboratories director and executive VP for Mission Support was moved to be named the school's 2013 Alumni Award winner for the School of Sciences. "I was totally surprised when they informed me that I was selected," she says. "It is a great honor for me."

The awards pay tribute to one graduate from each of the university's seven schools and colleges who has demonstrated exceptional leadership and professional commitment. "The University Alumni Awards celebrate the breadth and depth of talent evidenced in these distinguished individuals and recognize their contributions toward their communities," says UMass Lowell Chancellor Marty Meehan. "Through their innovation, dedication, and compassion, these alumni are building a better future for each of us."

Kim, who earned her BS in business administration from Robert Morris University, is a member of the Society of Women Engineers and Women in Defense. She was previously vice president for Technical Operations at Lockheed Martin's Mission Systems & Sensors. Other positions include VP for Advanced Concepts in Lockheed Martin's Corporate Engineering & Technology function, VP of Net-Centric Integration, and information technology program VP for Lockheed Martin's Computing and Network Services. Her industry experience includes chemicals, engineering, manufacturing, IT, consumer products, and defense with DuPont, TRW, Xerox, Coca-Cola Enterprises, and BAE Systems (formerly Lockheed Martin Sanders).

Kim was told about the award recently when school officials visited Sandia. "When fellow alumnus Bill Rhodes (6810) brought Mark Hines, the UMass dean of Sciences, and Deme Gys of the UMass Office of Advancement to meet with me, I enjoyed hearing about the significant changes and progress the university has made since I graduated," Kim says.

Bill says he nominated Kim because she embodies the spirit of the Alumni Award. "Kim has demonstrated the kind of leadership and professional excellence that can inspire a new generation of students," he says. "And as a woman with a successful career in executive management, she is a role model for female students."

Conrad James will apply analytical approach to his role as a UNM regent

Sandia researcher appointed by governor to serve on university board

By Neal Singer

When NM governor Susana Martinez appointed Conrad James (1714) to be a regent of the University of New Mexico, she got a person with a peculiarly apt background to do the job.

CONRAD JAMES

Conrad is an engineer and scientist who, from his own experience, understands what's needed for a decent technical education. He also served for two years as an elected member of the New Mexico House of Representatives, where he participated in the process by which state funds are allocated to programs throughout the state, including higher education.

"Regents have constitutional authority to oversee and guide the university's finances and programs," Conrad says. "And I'm familiar with that process from the legislative side from my time on the House Appropriations and Finance Committee. As an advocate for science and engineering, one of my goals will be to make sure the university educates a strong workforce with an emphasis on STEM [science, technology, engineering, and math] and strong partnerships with the public and private sectors. We want to continue to help UNM be a world-class institution for educating students, and also a place where world-class research is performed."

Conrad received his doctorate in applied and engineering physics from Cornell University in 2002. His dissertation focused on the fabrication of microelectrode arrays to monitor the electrical activity of in vitro neural networks as a function of network architecture. "My work in graduate school required a significant amount of microsystem design and fabrication, and Sandia's reputation as a leader in microsystems development is what drew me to the Labs when looking for a job after graduation."

At Sandia, he does microsystems engineering on projects ranging from biological sensors to next-generation computing devices. "The common thread in all of my work is a focus on developing biologically inspired microsystems that help us to discover new insights into living organisms or to use principles found in biology to do things such as detecting pathogens."

> ***"We want to continue to help UNM be a world-class institution for educating students, and also a place where world-class research is performed."***
>
> **— Conrad James**

He became a state legislator because he "wanted to see more science and engineering backgrounds in elected representatives. Decisions on education and economic policy affect science research, and having that type of technical background gives you a different perspective on policy, specifically with regard to evaluating outcomes and making investments for the long-term."

When he learned that his own state representative intended to resign her post and run for governor, "I went and talked with [the retiring rep] and a number of other people, and I eventually went through the process of filing for the legislative seat. Fortunately, no one else filed so I walked into office in 2011 unopposed."

His easy victory gave no indication of how much work he was capable of doing. He succeeded in getting four bills signed by the governor in the two years he served in office. Among them were a law that improves the statewide coordination of care between hospitals for victims of strokes, and a law that reduces gross receipts tax "pyramiding" in the manufacturing and construction industries. "I have always tried to take an analytical approach toward legislation whereby you assess the problem, propose solutions, perform a cost-benefit analysis, and then select the best path forward."

As a regent, he expects to take the same analytical approach in judging the effectiveness of current and proposed programs.

"'Outcome-based assessments' is a powerful method by which to conduct policy-making," he says. "I specifically want to examine graduation rates and post-graduate employment. We also need to make sure that students are able to enter their intended majors and that they have enough flexibility to craft a degree program suitable to their needs. I'm also concerned that student-athletes have enough support to manage the delicate balance between their athletic activities and their studies, and I'm interested in evaluating the entrance and outcomes of underrepresented minorities at the university, and whether STEM graduates are going on to graduate schools and/or the workforce."

"It's the actual outcomes of policies that need to be measured and evaluated," he says, "not just the predicted outcomes for those policies. As an analogy, we can't just examine the design for a widget that has been put together on a computer — we also need to evaluate how the widget actually operates after it has been built."

Because he enjoys policy-making, the married father of three pre-teen children is looking forward to the opportunities afforded by the regent position. He says that "the UNM post will allow me to continue to have an impact on policy-making in higher education, and it's also a good demonstration of Sandia National Labs' commitment to serving our community."

His current appointment by the governor lasts until the end of the 60-day session on March 16. During this time, the state Senate must confirm his appointment to a full six-year term. Another Sandian, Sandra Begay-Campbell, served on the UNM Board of Regents from 2001-2006.

3 Sandians honored with Black Engineer of the Year awards

(Continued from page 12)

comes from helping a minority job applicant start on the path to success. "If that person can someday be the next director, that's what matters to me," he says.

He attends university career fairs, recruitment events, and conferences to increase minority recruitment. He has hired several top science and engineering candidates, primarily from the North Carolina A&T State University career fair. Sixty-four percent of new hires in Anthony's organization in the past three years have been minorities.

"I continually seek opportunities to engage with young scientists and engineers from minority backgrounds," he says. "I believe this young, diverse talent will enhance the future of Sandia and of our nation. To me diversity is about taking advantage of the strengths of different cultures and individuals and backgrounds. I equate it to a piano. There are black keys and white keys. You can't make beautiful music with just the black or just the white. You need both."

Marcey Hoover, senior manager of Surety Engineering Dept. 420, says Anthony promotes a highly inclusive work culture in his organization. "Anthony is compassionate and dedicated to providing opportunities for others," she says. "He not only recruits and hires minorities and underrepresented populations, but he also retains those staff members through active mentoring and coaching, focusing on the entire lifecycle of a staff member and creating a robust environment for individuals to grow and succeed in their professional goals."

Anthony and his wife Kim have been foster parents to 32 young people in the past four years. "Fostering is an opportunity to reach out and touch more kids," he says. "Passing through this life, between sunrise and sunset, there's a dash — your lifespan. What have you done that represents that dash? We chose to be foster parents to make a difference in the life of a young person who might have had hardships.

"If we can make a difference in one or two lives, it's been worth the journey and effort. With God's continued blessings, we will continue to strive and make a difference in the lives we touch at work and outside of work along this journey."

* * *

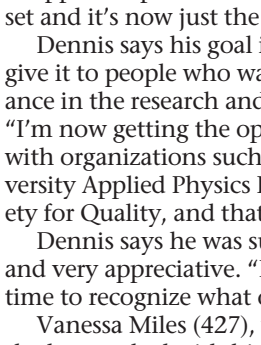
Dennis Owens
Thinking of prevention, always

Dennis, a native of Phoenix, Ariz., was faced with a tough decision as a junior at New Mexico State University. He was a starting defensive back on an athletic scholarship and had to choose whether to pursue a dream of professional football or give up his scholarship and focus on academics.

He picked academics. "After three years and the academic sacrifices of a student athlete, I needed to put all my energy and efforts into getting my degree," he says.

Dennis earned a bachelor's degree in mechanical engineering technology and went to work in 1988 for General Electric Aircraft Engines in Albuquerque. He worked his way up to product engineer in seven years.

When the time came in 1994 to leave GE for something different, the Six Sigma and ISO 9000 movements were growing along with the concept of quality. "I was hearing more and more about the quality movement," Dennis says. "I liked the tools of it and, more importantly, I saw the value in the prevention of defects."



DENNIS OWENS

Over the next six years, in jobs at two startups, the semiconductor company Silmax Inc. and Honeywell Power Systems, a micro turbine assembly plant, Dennis built his expertise in quality engineering. With formal training he designed the architecture of quality management systems (QMS) for both businesses.

"I got into quality as a vocation because I liked the thinking," he says. "The startups I worked at did not have a QMS model or a way to practice engineering in a sensible manner. My job became to develop the systems to make that happen."

Dennis joined Sandia in 2001 as a quality engineer in neutron generator production. He worked on NG requalification and put together an internal quality audit program for Center 2700 (formerly 14400). He moved on to Integrated Military Systems Center 5400 as a quality engineer supporting Navy, Army, and Missile Defense Agency programs. He also led Lean Six Sigma projects to reduce and manage launch fielding activities, strategic planning, and lab space improvements.

Dennis was promoted in 2008 to manager in the Surety, Assessment Engineering, and Analysis Center 400. In 2010 he co-led the center's ISO 9001:2008 QMS project and got it registered in seven months.

"Thus far, quality has been my career at Sandia," Dennis says. "Regardless of my assignment, I've learned to approach problem-solving from a prevention mindset and it's now just the way I think."

Dennis says his goal is to take what he's learned and give it to people who want to understand quality assurance in the research and development environment. "I'm now getting the opportunity to share that message with organizations such as NASA, Johns Hopkins University Applied Physics Laboratory, and American Society for Quality, and that's exciting," he says.

Dennis says he was surprised about the BEYA award and very appreciative. "It's great that someone took the time to recognize what others do," he says.

Vanessa Miles (427), who nominated Dennis, says she has worked with him since last fall and been impressed by the quality system and training he put in place. "It was a lot of work," she says. "Dennis is very much a trailblazer and very deserving of this award."

Dennis may have given up football for engineering, but he still hits the gridiron as a coach for his kids' teams. In his spare time he likes to fish, golf, travel, and serve with his wife as small-group bible study leaders for their church.

But quality is never far from his mind. "I would like my legacy to be that Sandia is known as much for its technical approach to quality as for its engineering excellence," he says.

Carl Rhinehart
A pipeline of opportunity

Carl took to leadership at a young age. He spent middle school summers working in the Mayor's Teens Volunteer program in his hometown of Rock Hill, S.C. He volunteered in the parks leading younger kids through arts and crafts and physical activities. And he helped the American Red Cross put together aid packages for families in need.

Carl became the first member of his family to attend college. He earned a bachelor's degree in industrial and systems engineering from North Carolina A&T State University in 2002 and was quickly recruited into Sandia's One Year on Campus (OYOC) program. He completed a master's degree in industrial engineering as a full-time student while employed by the Labs.

Carl returned to Sandia in 2003 as a manufacturing and operations engineer in the neutron generator group, responsible for test inspection processes on the production floor. He refined processes and boosted efficiency.

CARL RHINEHART

While a test design engineer Carl received two NNSA Defense Programs Awards of Excellence and an Employee Recognition Award. He was promoted to Senior Member of Technical Staff in 2006. A year later he was named Product Realization Lead for a team of 10 engineers from design and production agencies.

New challenges beckoned, and Carl moved to the System and Software Quality Engineering groups, taking on a variety of quality engineering and project management roles. He went back to school in 2010 to earn a master's in business administration from New Mexico State University while working full time. He was promoted to Principal Member of Technical Staff in 2012.

Carl currently is technical deputy of the Independent Surety Assessment Group where he is technical lead and project manager for several programs, including Independent Surety and Independent Nuclear Weapon Assessment. He helps with planning and managing technical activities for five departments and 45 staff members.

"This job gives me a broad view of the nuclear weapons complex," he says. "It's been very fulfilling."

Mentorship and minority recruitment are integral to Carl's life. He mentors numerous staff members on quality engineering. In 2010 he began working through Sandia's Black Leadership Committee as a recruiter of minority science and engineering job candidates. He focuses particularly on his alma mater, North Carolina A&T, and has brought three undergraduates into the Master's Fellowship Program, formally OYOC, where he got his start.

"My objective is to open the pipeline," Carl says. "It feels like I'm giving back and spreading the word about opportunities at Sandia. I want other minorities to have the opportunity I had."

Carl promotes science, technology, and engineering with Albuquerque middle and high school students through the Hands on Minds on Technologies program. He also coaches youth football and basketball. "I want to encourage and inspire young people," he says.

Carl says he is honored to be chosen for a BEYA award. "This is a national recognition," he says. "It feels great."

Marcey Hoover, senior manager of Surety Engineering Dept. 420, nominated Carl and says he has distinguished himself as a technical contributor, leader, and mentor. "He is deeply committed to the mission of Sandia National Laboratories, dedicated to addressing the most pressing national security challenges, and passionate in his support of minorities seeking science and technology careers," she says.

Col. Paul Tibbets IV addresses Weapon Intern Program class

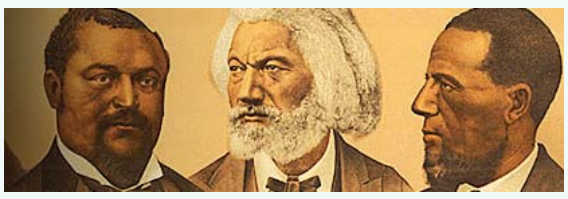
COL. PAUL TIBBETS IV, commander of the Air Force Inspection Agency at Kirtland Air Force Base, took time out of his schedule to brief participants in the Sandia Weapon Intern Program about B-2 operations in advance of their trip to Whiteman Air Force Base in Missouri. Tibbets is the grandson of Col. Paul Tibbets, who commanded the 509th Composite Group and flew the Enola Gay in the atomic attack on Hiroshima at the close of World War II. Col Tibbets IV has flown both the B-1 and the B-2 aircraft and has logged more than 3,800 hours in the air. (Photo by Randy Montoya)

Quality trio

Black engineers get national nod for reaching beyond the expected

TOP QUALITY — Dennis Owens (424), left, J. Anthony Wingate (422), and Carl Rhinehart (410) were honored with 2013 national Black Engineer of the Year Awards. They met for this photo in the gallery of the African American Performing Arts Center & Exhibit Hall at Expo New Mexico in Albuquerque. The gallery exhibition presented artwork and photos tracing the history of African Americans in New Mexico. The center's mission is to preserve, nurture, and support the intellectual and cultural history of African Americans in New Mexico and the Southwest. (Photo by Randy Montoya)

February is African American History Month



Black History month is celebrated annually in the United States during February to remember and celebrate the achievements black Americans and their central role in US history.

The story of Black History Month begins in 1915 when historian Carter G. Woodson and minister Jesse E. Moorland founded the Association for the Study of Negro Life and History, dedicated to researching and promoting achievements by black Americans and other peoples of African descent. Now known as the Association for the Study of African American Life and History, the group sponsored a national Negro History Week in 1926, choosing the second week of February to coincide with the birthdays of Abraham Lincoln and Frederick Douglass.

Mayors across the country began issuing yearly proclamations recognizing Negro History Week. In the late 1960s, due to the civil rights movement and a growing awareness of black identity, Negro History Week evolved into Black History Month. President Gerald Ford officially recognized Black History Month in 1976, calling upon the public to "seize the opportunity to honor the too-often neglected accomplishments of black Americans in every area of endeavor throughout our history."

Each American president since then has designated February as Black History Month and endorsed a theme. The 2013 theme is "At the Crossroads of Freedom and Equality," celebrating the anniversary of two important African American turning points, the 1863 Emancipation Proclamation and the 1963 March on Washington.

By Nancy Salem

Three Sandians who share a commitment to quality and diversity are winners of 2013 Black Engineer of the Year (BEYA) awards.

J. Anthony Wingate, manager of Subsystems and Component Quality Engineering Dept. 422, was named Professional Engineer of the Year for Diversity Leadership. Dennis Owens, manager of Defense Systems Quality Engineering Dept. 424, and Carl Rhinehart (410) received Science Spectrum Trailblazer awards.

BEYA is a program of the national Career Communications Group, an advocate for corporate diversity, and part of its STEM achievement program. The awards recognize the nation's best and brightest engineers, scientists, and technology experts. Anthony, Carl, and Dennis, who all work in Sandia's weapons program, will receive their awards at the 27th BEYA conference Feb. 7-9 in Washington, D.C. The event precedes National Engineers Week.

"These gentlemen are exemplary representatives of the incredible talent we have at Sandia," says Labs' Chief Diversity Officer Esther Hernandez. "It is so inspiring to learn of Anthony, Carl, and Dennis's outstanding achievements, to gain a brief glimpse of their personal stories, and to feel their passion about growing and preparing our Sandia workforce for tomorrow. Well done and congratulations."

J. Anthony Wingate
Music with all the keys

Anthony's early experiences as an African American in the workforce were not always positive, but they did strengthen his resolve to help minorities get better jobs.

"At one company I spoke out for student interns who wanted information about job opportunities. They wouldn't even set up a meeting," Anthony recalls. "Another time I applied for a management position, had the qualifications, and didn't even get an interview. The guy I had been training got the job.

"Letdowns like that kindled my passion for advancing not only engineering excellence but also operational and hiring excellence through equal opportunity. I envision a world in which organizations draw on workforce diversity to solve rigorous engineering challenges, and management welcomes fresh talent from an assortment of backgrounds."

Anthony later joined Sandia, where he has been a leader in the diversity effort while building a distinguished career in quality engineering and management.

J. ANTHONY WINGATE

Anthony grew up in Beaumont, Texas, and earned a bachelor's degree in mechanical engineering from Lamar University. He did summer engineering internships with several Texas companies before joining General Electric, first in GE's Manufacturing Management Program in Massachusetts and later in Florida, where he developed engineering systems and oversaw component and manufacturing processes.

He went to work for Martin Marietta, now Lockheed Martin, in 1992 as a specialty components senior engineer and project leader. He was nominated in 1993 for the Black Engineer of the Year Award and began seriously pursuing affirmative action.

Anthony transferred to Sandia in 1994, where he assumed responsibility for creating, releasing, and managing documentation for a variety of quality infrastructure activities. He has since worked with several organizations, from product engineering to project lead missions engineering and project management. He has been manager of Subsystems and Component Quality Engineering since 2008.

Anthony has received numerous awards and recognitions, including being named an NNSA employee of the quarter in 2012. He says he is humbled and honored by the BEYA recognition, but that his real reward

(Continued on page 11)