



'Together, we deliver'

Deputy Labs Director and Executive VP for Mission Support Kim Sawyer conducts all-hand meeting for Mission Support team. Story on Page 7.

Labs Director Paul Hommert offers a sustaining vision for Sandia

By Nancy Salem

Sandia has a strategic plan that guides a continuous examination of mission to keep the Labs vibrant and valuable to the nation, Sandia President and Laboratories Director Paul Hommert told the workforce Thursday in his annual State of the Labs address.

"We have strength in the ability of our people and the continuity of our mission," he said.

Sandia leadership has done extensive work recently on articulating the Labs' eight mission areas: maintain a safe, secure stockpile and an effective nuclear deterrent now and into the future; reduce global nuclear dangers; provide nuclear assessments and warning; enable the United States to defend and dominate in cyberspace; maintain US defense technological superiority through synergistic products; maintain US defense technological superiority through leveraged innovations; reduce global chemical and biological dangers; and ensure a secure and sustainable energy future.

"They define Sandia National Laboratories and how we want to talk about what we do as a 21st century national security laboratory, and why we do it," Paul said. The mission topic will be covered in more detail in a future *LabNews* article.

Paul said that to enable the mission, Sandia relies first on its people. "You are our most extraordinary resource," he said. At the same time, multiple sites, world-class facilities and tools, science and engineering excellence, discipline-based research foundations, and institutional sup-



PRESIDENT AND LABORATORIES DIRECTOR Paul Hommert said in his annual State of the Labs address that Sandia relies first on its people to enable the mission. (Photo by Randy Montoya)

(Continued on page 7)

NNSA DP Awards of Excellence

Two individuals, 14 teams recognized in annual awards program that honors work in nuclear weapons enterprise



Sandia VP, Chief Weapon Engineer Bruce Walker talks about Sandia's 'very substantial' role in B61 LEP

As Bruce Walker, VP for Weapons Engineering and Product Realization, said recently, Sandia's work on the National Nuclear Security Administration's B61 Life Extension Program is the largest nuclear weapons program in his 35 years at the Labs. The project is a major element in President Barack Obama's recommitment to our allies that the US will continue its policy of extended deterrence, and therefore a cornerstone of the nation's nuclear posture. NNSA officials have estimated the cost of the program by the end of the decade to be \$8 billion, with Sandia's role around \$2.65 billion. The Lab News asked Bruce to share his thoughts on the B61 LEP and how Sandia is responding to this challenge.

Lab News: What is a Life Extension Program — an LEP — and why do we need one for the B61?

Bruce Walker: A Life Extension Program is just what it sounds like: an effort to extend the life of an existing weapon. The 2010 Nuclear Posture Review reaffirmed the role of the B61 as a critical element of the nation's strategic deterrent, but it's an aging system with a number of components that need to be addressed to extend its service life.

LN: How big a role will Sandia have in the LEP process?



BW: We are responsible for the overall system engineering and integration, a key aspect of the LEP, and we have responsibility for the non-nuclear components of the weapon, as well. Given those responsibilities, I would say Sandia's overall role is very substantial.

LN: Could you talk about some of the most important activities associated with the project?

BW: The B61 is a complex weapon system; it's got (Continued on page 4)

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KATHERINE GUZMAN a 2013 HENAAC Luminary 11

Notice of Exchange to be released Oct. 1
New health insurance market-place coverage options and your health coverage. Page 15.



Sandia, KAFB celebrate Hispanic Heritage Month with Diversity Awareness Event on Hardin Field. Details on page 10.

That's that

As I write this, it was exactly 12 years ago that the US was attacked by terrorist death squads under Al Qaeda's control. When that first plane hit the World Trade Center, at 6:46 a.m. our time, many of us were on our way to work. We heard the news on the radio and thought "What a terrible accident."

When the second plane hit, though, we knew. We knew we were at war, a war that has changed our lives in ways we are still coming to understand.

Time has moved on. 9/10/2001 seems to belong to another world, an alternative reality where all of us used to live. Was it just 12 years ago? It was as if time ended that day and the world rebooted. It was so long ago . . . and only yesterday.

In William Shakespeare's *Henry V*, the king said, "Old men forget, yet all shall be forgot/But he'll remember with advantages/What feats he did that day . . ."

Likewise, for us, when all has been forgot, we will remember 9/11, the horrors and the heroes, and the feats they did that day. We'll remember those who flung themselves from windows impossibly high up in the air, certain that somewhere between the 90th floor and the ground, they entered a state of grace. We'll remember, too, that while bodies, plaster, mortar, and steel rained down, the heroes headed up, up, up into the fire. Where the terrorists brought death, our heroes fought for life. And saved many. And died in their hundreds.

Many of the heroes of that day have suffered in their turn and many thousands more have given their lives to ensure that we never see another 9/11. We owe them everything, but we can at least spare a moment to remember . . . and to say: Thanks. To borrow again from *Henry V*: "This story shall the good man teach his son . . ." – That in her time of need, everyday American heroes answered the call.

* * *

It was a simple request: "Michelle," I asked our OAA, "do we have any Wite-Out?" (That's how it's spelled by the way; it's a brand name, like Liquid Paper). Michelle poked around for a moment and then said, "I think I threw away the last of the stuff we had right before we moved. It was all dried out." Oh. Okay.

What she didn't have to say was that it was dried out because it had probably been 15 years or more since anyone had used it. Another iconic fixture of American offices made moot by the ascendancy of the digital age. *Sic transit Gloria mundi*: So passes the glory of the world.

So consider this my small paean to the wonders of correction fluid. Back in the day, after a "lost decade" in which my work history made me sound like the poster child for the peripatetic aspiring writer, I decided to go back to school to study journalism. Figured I ought to get paid for something I was passably good at.

Anyhow, I'd always written stuff out longhand, but at J-school, typewriters were de rigueur. Everybody else in my classes could type 90 words a minute blindfolded. I could tap out maybe 20, one finger peck at a time, with tons of errors. According to newsroom protocol, I could have just "x-ed" out mistakes, but my stories for Reporting 101, Magazine Writing, and so on, looked so horrible, were such an embarrassment, riddled with so many x's, that I resorted to correction fluid. I went through it by the gallon.

When my profs talked about my uniquely textured stories, they weren't talking about the words . . . they were talking about the feel of the Wite-Out-laden paper itself. It gave my work a distinct, three-dimensional feel.

In my first professional job, I went through so much of the stuff that our secretary started looking at me funny when I asked her to order more; I'm sure she thought I was inhaling the stuff. That, or drinking it. Or both.

The advent of word processing programs, with their miraculous back key, delete key, copy, cut, and paste, were a godsend for me. I still peck out my sentences one finger at a time, but you'd never know it. And no, despite what one of my colleagues once alleged, I never tried to dab my computer monitor with Wite-Out, but I *did* have to use the stuff now and then to carefully redraw the letters on my horribly abused keyboards.

And oh, one final ironic note: When I asked Michelle about Wite-Out, it wasn't to blot out a mistake on a piece of paper; it was to mark the case of my new iPhone so I'd know which end was up (which I'm wont to forget).

See you next time.

– Bill Murphy (505-845-0845, MS 1468, wtmurph@sandia.gov)

Ed Cole appointed Fellow by ASM International



Ed Cole (1000), appointed a Sandia Fellow in June, has been elected by the board of trustees of ASM International as a Fellow of that society.

The ASM International website describes itself as a society of 36,000 members worldwide "dedicated to supporting the materials and engineering professions."

According to the notification letter, "The honor of Fellow represents recognition of your distinguished contributions in the field of materials science and engineering, and develops a broadly based forum for technical and professional leaders to serve as advisors to the society."

Ed's citation reads, "For revolutionizing microelectronics failure analysis by the development of Charge Induced Voltage Alteration, Light Induced Voltage Alteration and Soft Defect Localization techniques for analyzing integrated circuits."

The honor officially will be conferred during the ASM awards dinner on Tuesday, Oct. 29, in Montreal, Canada.

— Neal Singer



ED COLE

Take Note!

LOCKHEED MARTIN

Lockheed Martin Foundation Academic Scholarships

The Lockheed Martin Foundation Academic Scholarships are awarded to 100 children of employees who qualify as National Merit Finalists and National Merit Special Scholars. High school juniors who will be entering college in the fall of 2015 must take the PSAT/NMSQT in October 2013. Students should obtain a copy of the 2013 Official Student Guide to the PSAT/NMSQT from their high school counselor and make arrangements to take the test. To be considered for the scholarship, students will also need to submit an online application with Lockheed Martin by Feb. 28, 2014, even if they have not received their PSAT/NMSQT scores.

For more information and application form, go to <http://tiny.sandia.gov/83dys>.

Sandia LabNews



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

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Carrying the load for Sandia, community



FOR MORE THAN 10 YEARS, Sandia's Mail Services team (10261-1) has partnered with Community Involvement Dept. 3652 on a wide variety of collection drives. By ensuring that all donated items are delivered to one central location, the Mail Services team has made it much easier to get the item to those in most need in the community. Community Involvement manager Amy Tapia says, "We really appreciate their hard work and commitment to Sandia's corporate-sponsored drives. Their attitude is always 'What can we do to help?' They're critical to the success of Sandia's efforts to support the community." Pictured here are, front row, left to right, Denise York, Andy Miera, and Ellen Homan. In the second row are Lily Jimenez and Bob Locher. Team member Edna Fonseca is not pictured.

(Photo by Patty Zamora)

Flex-Life initiative to go corporate-wide



SANDIA/CALIFORNIA'S Flex-Life initiative encourages and helps facilitate balance in work and personal life. (Photo by Dino Vournas)

By Patti Koning

The Flex-Life initiative started off small, a pilot project at the California site to help employees and managers better understand and use their workplace resources to integrate life with work. The program is poised to grow in a big way next year with a proposal to move the pilot project to all Sandia sites.

The roots of Flex-Life go back to the spring of 2012. "Several things happened that made us realize no one was quite sure of everything that Sandia offers in terms of workplace resources to balance work and life, everything ranging from health care to corporate discounts, social clubs, and alternative schedules," says Morgan Edwinson (8527), HBE and compensation manager. "We were telling new employees about perks like flexible schedules and telecommuting, but the truth was these weren't universally available. At the same time, online health assessments for the California site revealed that our population had problems with stress management, job satisfaction, and life satisfaction."

A task force was formed consisting of Morgan, Kristy Falvey, Michele Lyon (8522), Laura Plosser (8900), Lisa Ramos (8522), Noel Richmond (8539), Linda Sager (8511), Kristy Sibert (8522) [project lead], and Ricky Tam. Kim Edson (8522) and Mary Behrendt were the manager champions. The first step was to pull together all of the workplace resources that fall under the Flex-Life umbrella into one website, info.sandia.gov/flex-life.

The task force catalogued more than 60 items and in the process realized that even they — a group of subject-matter experts — didn't know about or understand everything. The goal, says Morgan, was to make the information easy to find and direct users within one to three clicks to a policy, utilization site, or point of contact.

Connecting with the Sandia community

The Flex-Life website organizes the workplace resources into Flex Cool Stuff, Flex Health, Flex Mastery, Flex Place, and Flex Time categories. Among the resources listed are adoption assistance, Employee Recognition Awards, expectant parent program, personal absence, physical therapy, Technical Library, Sandia Laboratory Federal Credit Union, university programs, and vacation buy. The Flex-Life task force welcomes feedback on the website.

"These workplace resources apply to the full cycle — whether you are starting your career, trying to balance working with raising young children, caring for elderly parents, or feeling stuck in a rut," says Morgan. "If you want to connect with Sandia's community, it's there. If you need help with your family and your personal life, it's there. If you need help with your health, it's there. If you want to learn how to run a 5k, it's there. It's pretty darned amazing. At the end of the day, we want your personal life to be easier so you can engage with and enjoy your work."

To ensure solid comprehension of Flex-Life, the task force also began holding information sessions for employees and managers. "The goal is to help managers understand what is available and that Sandia is behind

these services," says Morgan. "And to help employees gain the same understanding and learn how to engage their managers to access services that require management assistance and approval."

Jennifer Benoit (8521), who coordinates Creative Services at the California site, went through the Flex-Life training so she could explore and propose telecommuting to her manager. Coming back from maternity leave last spring, Jennifer wanted a schedule that would allow her to be home in the afternoons and to miss the afternoon commute traffic. She proposed a split schedule with about 80 percent of her time in the office.

"The Flex-Life training helped me understand what needed to go into the plan and how I needed to account not just for my needs, but how telecommuting would impact my co-workers and my ability to get my job done and how we would evaluate that," says Jennifer.

After she presented her telecommuting proposal to her manager, Catherine Dawson (8521), Jennifer then shared the plan with and gathered feedback from her immediate co-workers. Catherine and Jennifer's co-workers who are impacted by her telecommuting schedule will review the plan regularly.

Morgan describes this as a good example of how Flex-Life training can help both the employee and manager. She says it was important that the team bought into Jennifer's proposal and realized she was not receiving special treatment. Alternative work schedules like telecommuting are considered on an individual basis and are dependent on job function, impact on others, and Sandia's business needs.

Sorting out sticky issues

The research also revealed what Morgan describes as "sticky issues," where there are discrepancies between a policy and a form or where policies seem to apply only to exempt staff.

An example is wellness or classes talks that are offered by HBE. "In the past, there has been confusion about what non-exempt staff are and are not allowed to do if they have 30 minutes for lunch but want to attend an activity that is longer," says Morgan. "Non-exempt staff must account for their time, but they can work out a solution with their managers."

Another conflict is with corporate discounts through Lockheed Martin. "We aren't allowed to publish what those discounts are," says Morgan. "We are uncovering funny stuff like that."

The Flex-Life initiative became much more prominent in February after the FY13 Milestones were announced. Flex-Life was identified as a way to support Strategic Objective 5.1: Inspiring environment for an engaged workforce. "This was when we began to look at rolling this out for all of Sandia, not just the California site," says Morgan.

The corporate rollout is scheduled for early in calendar year 2014. Morgan and Cara Waymire (3333) are pulling together data from surveys, focus groups, Flex-Life trainings, and website use. They will report these findings and recommendations to leadership this fall.

"It's obvious to me that we have hit upon an important issue and we've gotten overwhelmingly positive feedback on the website," she says. "Going forward we need to have the right vision of striking a balance between managing for productivity and managing for health and happiness. There are a lot of important conversations that need to happen. How we will measure success is still undetermined and it's all a little daunting, to be honest."

Sandia California News



California lactation rooms

The California site is experiencing a construction boom, with relocations and reconfigurations to accommodate growing programs and achieve the site development plan. In the midst of this flurry of activity, an opportunity arose to meet another rising need at the site — more lactation rooms.

Currently, the site has one lactation room in the medical building, but this is not enough to meet the increased volume of expecting staff members, and the location is not convenient to all women who might use it. By the end of the year, three new lactation rooms will open in Bldgs. 911 and 942 and mobile 28. Each room will have two pump stations furnished with desks, comfortable ergonomic chairs, privacy curtains, laptop ports, and phones. The rooms will also have a communal counter space with storage and a refrigerator. Each room is located near a sink, which was identified as a necessary amenity.

The lactation rooms will give mothers a comfortable and convenient place to pump breast milk for later use. Comfortable and convenient is something that many women have had to do without, forced to pump in their cars or busy bathroom stalls. An office with a door works, but this can still lead to awkward situations with co-workers who aren't fully in the know.

Common at most large companies

"As a new mom, and expecting my next, having a private place close to my office to pump milk is vital," says Patricia Gharagozloo (8365). "The feelings of inconveniencing your officemate, asking people to leave a conference room you have reserved, or having to waste time to walk across the site to use a room at the clinic multiple times a day are all demoralizing. I am proud to work for an organization that is making the effort to support nursing mothers and enabling them to care for their children how they choose even after returning to work."

Lactation rooms are common at most large companies, including national laboratories. The Patient Protection and Affordable Care Act requires employers to provide reasonable break time and a private, non-bathroom place for nursing mothers to express breast milk during the workday, for one year after the child's birth. This is also mandated by California state law (Cal. Labor Code § 1030 et seq. (2001)).

"Moms who breastfeed don't always realize they have the right to time and a designated place to pump at work, or that asking for support from an employer isn't an unreasonable demand," says Xinh Lorente (8515-4). "These new lactation rooms will help improve productivity because moms will appreciate being able to balance work responsibilities with family life."

While motivation to add more lactation rooms did not come directly from the Flex-Life initiative, Morgan Edwinson (8527) says the open conversation about work-life balance helped set the stage. "We've really got some momentum going with Flex-Life," she says. "And the timing couldn't be better. We are experiencing an upswing in the number of expecting mothers."

Patricia says her participation in the Diversity and Inclusion Action Planning Team, one of several groups of employees working to improve diversity and inclusion at Sandia, informed her decision to approach her manager about turning an unused office in her building into a lactation room. She is leading the Policy Reformers team, which works to identify non-inclusive policies and practices, determine how they should be changed, and work with management to implement the changes.

See more California site news on page 13

Sandia California News



DIV. 2000 VP AND CHIEF WEAPON ENGINEER BRUCE WALKER says the B61 LEP is one of the most complex weapon programs the Labs has undertaken in several decades.
(Photo by Randy Montoya)

Bruce Walker on Sandia's 'substantial' role in B61 LEP

(Continued from page 1)

30-plus major subsystems, comprising of numerous components, each of which is quite complex in itself. We have the design and development responsibility for all those components, working with our partners at the Kansas City Plant and at Los Alamos and Pantex. Through a rigorous program of computational simulation, laboratory tests, and flight tests, we have to qualify every one of those components for the environments in which they operate.

In addition to our responsibilities for each individual component, we are also the system integrator for the program, which means we do the system engineering and integration to pull all of the components together to develop a militarily useful weapons system.

We also have responsibility for the bomb casing, the aerodynamics, and the aircraft interface, which in the case of the B61 is a big job in itself because the weapon must be qualified on five aircraft, the F-16, F-15, the PA-200 Tornado, the B-2, and the F-35 Joint Strike Fighter. And, like the components on the inside, the bomb assembly has to endure and function reliably under a wide range of harsh mechanical and physical environments — vibration on an aircraft, large temperature ranges, etc.

In addition to our design and system integration responsibilities, Sandia has production responsibilities for microelectronic products from MESA and for neutron generators. We also have the responsibility for oversight of both internal and external manufacture.

LN: Are we updating every one of these components?

BW: No. We've gone through and looked for the most appropriate, cost-effective choice: either reusing the component, remanufacturing it, or redesigning it.

By reuse, we mean that we take that component, analyze it, and re-qualify it for application back into the weapon system with no change. By remanufacture, we mean we determine whether it has exceeded its original lifetime, and if so, remanufacture it to its original design specification. We may do that, for example, with

a thermal battery. It's still a viable technology today, and so we can remanufacture to the same design.

But that's not the case with every component. For example, consider the B61 radar; we couldn't remanufacture that today even if we wanted to because it consists of many parts that are no longer available, what's called sunset technology. You can no longer buy the components in the radar to remanufacture it today. So we need to redesign it to use modern, reliable components.

'Given that you're starting with something that's maybe 30-45 years old today and you want to certify it for another 20 years, it takes a lot of detailed analysis and engineering judgment to be able to make that decision on reuse, remanufacture, or redesign.'

LN: How does the scope of the B61 LEP compare to other LEPs we've done, like the W76-1, or to some of the full-up weapon design programs that we did back in the '80s and earlier.

BW: In terms of the overall complexity, the B61-12 Life Extension Program, as we call it, is the largest nuclear weapon program in my 35 years at Sandia.

One thing that drives the cost of the program and the overall program complexity is the fact that we have to qualify the B61-12 in our modern safety environments, we have to qualify it for five different aircraft, and we have to design the system so it can be reliably produced. All these factors combine to make the B61-12 programmatically the most complex program we've ever done. And we have a lot of people involved — about 660 full time equivalents today, and at least 1,600 people at the Labs who have touched the program so far.

LN: Does the sheer scope of this program pose unique challenges?

BW: It certainly does. Things don't necessarily just

scale. The level of management involvement and the number and level of reviews are certainly more substantial. The level of oversight from our customers and sponsors is certainly higher, and the level of scrutiny by Congress is higher in the current fiscal environment.

LN: Could you touch on the unique staffing challenges associated with the B61 LEP?

BW: I believe so far that's been one of the success stories we can point to. We've had to increase our staffing significantly, bringing in about 300 people in the last year. And we've been able to do that within Sandia's process of internal post and bid, internal matrixing, and external hires, both experienced and inexperienced. We've brought in a good mix of people. And this is critical — we've been able to continue to meet our commitments to all of our customers other than just the B61-12.

LN: Do you anticipate that's going to get easier, or harder?

BW: Well, while we've staffed up most of the program that we need to staff, we will always have a few positions we need to fill. As roles change from design to qualification testing, to field test, and then production, there will be different roles, so additional people will move on to the program, and some will move on to other programs. So challenges will remain and budget uncertainties will make staffing an ongoing challenge.

LN: Do the budget uncertainties you mention make Sandia's role in the B61 LEP more complex?

BW: The impacts of sequestration and other budget constraints have been significant, in part because they've come toward the end of this fiscal year. And so we've had to re-plan activities. We've had to decrease our staffing rate in some areas. In other areas, we have continued to hire. This re-planning meant we shifted work to FY14 where we could. And we've shifted the FPU [first production unit] out a few months to be able to accommodate this.

LN: You mention hiring a lot of new people. How do you
(Continued on next page)

B61 LEP

(Continued from preceding page)

compare them and their talents, their commitment, their motivations, to the class of Sandians you came in with 35 years ago?

BW: I'm incredibly impressed with the new staff that I've seen on this project. They bring a high degree of motivation and dedication to the mission. They bring exceptional technical knowledge. We continue to hire from top universities — high GPAs and high-caliber students by any measure. And they are demonstrating that in their contributions to the program. So I believe another one of the success stories so far is our ability to bring in the appropriate balance of experienced and less-experienced staff.

If you look at the demographics on the B61, about 20 percent of the folks have less than 8-10 years of experience, 80 percent have more than that. In my judgment, that's an appropriate mix: We are using our experience to execute the program and mentor and train the new members of the workforce.

LN: Do the age of the legacy B61 and the issues of sunset technology make modernization more difficult?

BW: Because we want to save as much in cost as possible, we'd like to reuse as many of the existing components as we can. And given that you're starting with something that's maybe 30-45 years old today and you

remanufactured.

LN: Other than the size of the project and the age of the B61, what are some of the other major challenges and how do you envision meeting them?

BW: Well, I touched earlier on the level of national oversight that we have. Because the B61-12 is the iconic program today in the nuclear weapon enterprise, it has high attention within the DoD, within NNSA, and within Congress. The level of expectations of the rigor that we apply in project management is higher than ever before. The scrutiny on the program budget is expectedly high in these times when there is so much attention on the national budget.

So, yes, you might say we've got a bit of a perfect storm there, having a costly program at a time of budget austerity.

Then there are technical aspects that are difficult as well. I mentioned we have to qualify on five different aircraft. We have to interface to an Air Force tail kit. We have a number of new technologies and materials in the weapon system. We have components that come from MESA that go directly into the stockpile. We have the first use of RFICs — radio frequency integrated circuits — that greatly reduce the component count in our radar systems. We also have numerous examples where we have been able to make cost-effective improvements in safety and security.

LN: And all these things not only have to work independently but they all have to work together.

BW: Right.



"We depend on our research organizations and their understanding of the fundamental science in the component, of the materials in that component, understanding what the aging mechanisms are. Is the aging a diffusion process? Is it a corrosion process? What is impacting the life of this component? Then we make the judicious decision as to how to go forward. We must have high confidence that the component will continue to function properly in the future before we decide to reuse it."

want to certify it for another 20 years, it takes a lot of detailed analysis and engineering judgment to be able to make that decision on reuse, remanufacture, or redesign. That certainly adds a level of technical difficulty. Because a number of components are aging, there are a significant number of components that must be redesigned, which adds to the complexity and challenge of the program.

The other thing is the schedule imperative. Because of the age of the weapon system there's a strong imperative to do the LEP now.

LN: Generally, what are the kinds of decision points you must reach when you're looking at older components? Clearly you do materials testing and put components through a lot of stress, but what guides that decision to reuse or not. How do you decide whether a component will survive?

BW: We look at the surveillance data that we have on that component for the last several decades. We depend on our research organizations and their understanding of the fundamental science in the component, of the materials in that component, understanding what the aging mechanisms are. Is the aging a diffusion process? Is it a corrosion process? What is impacting the life of this component? Then we make the judicious decision as to how to go forward. We must have high confidence that the component will continue to function properly in the future before we decide to reuse it.

We have to reach the correct technical decision. And it's driven by cost in the sense that you could decide that everything's old, so let's just automatically replace everything. But we may not need to do that. We may be able, through careful analysis, to decide that there is a component we can requalify again for another several decades.

LN: Is requalifying a component as difficult as designing a new one?

BW: The Sandia challenge associated with requalifying a component requires the technical expertise that is at the core of who we are as a laboratory. The folks who are working that aspect of the program may have every bit as difficult a job as someone redesigning a component. Of course, there are usually cost savings here because the components don't have to be

LN: So it gets to a point where the, what was the term you used, the schedule imperative must loom over things all the time.

BW: It does. And the folks doing the work out on the line are very aware of that. Our resource-loaded schedules flow down to the product realization teams, all of which have to manage not just to performance requirements but also to cost and to schedule.

LN: If Congress just said, OK this is so important we're just going to double the budget instead of reducing it, would we be able to deliver sooner? Just talking in purely hypothetical terms, of course.

BW: First of all that's not going to happen. But in purely hypothetical terms, just the sequence of the number of design builds you need to adequately qualify the design and the computational and physical tests that you need to do to have confidence in the design pretty much sets the schedule. Undoubtedly, you could add more money and bring the schedule up in a few areas.

On the other hand, you could stretch things out to a longer time to meet cash flow. That would certainly be inefficient.

LN: That scenario is not quite so unrealistic.

BW: Unfortunately, that one may be quite realistic.

LN: By policy, the US hasn't designed a new weapon since the 1980s. What's the difference between a major LEP of this scope, with these new components, and a new weapon design?

BW: A life extension program of an existing weapon system doesn't add new military capability to that weapon, where a new weapon design may bring some new military capability. Otherwise, the scope can be very similar.

LN: How important are research and innovation in this effort?

BW: Research and innovation are critically important. I've talked about the importance of research in our decisions on reuse of components. It's equally important to our understanding of what happens in introducing new materials as we redesign components. There are materials that were suitable 20 years ago that are unsuitable today.

I can't take a beryllium-copper connector pin and clean it with trichloroethylene today. I need something environmentally suitable. I must use new materials. So research is critically important from the fundamental design all the way through qualification and production.

An example of innovation is the way we are increasing the level of commonality of components. We've had common components in the stockpile for a long time, but we're doing more today. For example, we're going to put the same radar system and one of the stronglinks in a gravity bomb like the B61-12 also into strategic missile systems. It takes a fair amount of innovation to come up with a radar design that will work both in a gravity bomb falling at a subsonic speed or a reentry body coming in at a hypersonic velocity in a plasma environment.

LN: What are you and the rest of the management team doing to meet NNSA's expectations, to help bolster its confidence in our ability to execute the B61 LEP?

BW: As I mentioned before, we've implemented an increased level of project management rigor, such as resource-loaded schedules, formal inspection of our requirements, formal requirements tracking, formal risk management and mitigation, and so on. We have a variety of reviews at all levels of management.

All in all, we've implemented a much higher level of project management rigor that we're continuing to improve. We're still on a journey here, and moving to earned value management.

We've completed a formal cost estimate of the B61-12 per our corporate process. We've had it reviewed internally; we've had an independent review. We've baselined it to the extent we can against other programs. So we're confident we can execute the program if provided the funding on the plan that we've delivered to the NNSA. The "if" here is that we're already experiencing some budget impacts from sequestration and other budget constraints.

LN: And those are unknowns that are hard to build into a schedule.

BW: Yes, we'll have to manage through those.

LN: You mentioned earned value management. A lot of readers aren't familiar with it and how it fits in.

BW: EVMS, earned value management system, is a way of quantitatively measuring where you are in the execution of a project in schedule and in cost. Accumulating all of these metrics adds a fair amount of overhead to the execution of a project, but it does provide a number of insights and early indicators.

We've implemented EVMS on construction projects at Sandia and on some smaller projects, but we haven't applied it to anything like the scale of the B61-12.

LN: So EVMS is another level of project management inspection, if you will?

BW: Yes, and our approach will be flexible or tailored to where it will add value. We're going to look at a cost performance indicator and a schedule performance indicator on a monthly basis so we can look at a subsystem and track more accurately how that team is doing in developing that subsystem. It's a way of measuring the tasks that you're actually accomplishing relative to your planned schedule and cost.

LN: So if you get off you're only going to get off a little bit before you get a yellow light

BW: Right, that's the idea behind it. You get an early indicator that, OK, we need to apply more resources to a particular element of the project. Or, conversely, you get an indicator that you are ahead of schedule. It works both ways.

Just to be clear, we don't have EVMS in place yet. We're transitioning our schedules to a tool called Primavera, and then we'll implement EVMS. NNSA has a lot of confidence in the EVMS methodology and our transition to it is a big confidence booster for them.

LN: Are we maintaining continuous feedback from the Air Force customer in the B61-12 LEP?

BW: With both the Air Force and NNSA we have what are called POG meetings — Program Officer Group meetings, that are usually at the senior manager level or lower — and at a higher level we have ESGs, Executive Steering Groups. So we have regular POG and ESG meetings to ensure adequate communication and oversight.

LN: Overall, how do you feel about Sandia's progress on the B61 LEP?

BW: I feel very good about where we are, our successes so far in meeting milestones, and the manner in which we have met them. The risk going forward is dominated by budget uncertainty.

B61 LEP radar drop tests completed successfully at TTR

Note: This article excerpted from an official NNSA news release highlighting the ongoing work in the B61 Life Extension Program.

As part of the ongoing effort to refurbish the aging B61 nuclear bomb without resorting to underground nuclear testing, two successful B61-12 radar drop tests were completed at the Tonopah Test Range in Nevada on Aug. 14 and 15 by Sandia engineers.

Current B61s use decades-old vacuum tubes as part of their radar system. The new radar system, which had not been tested outside of a laboratory environment, was assembled in a gravity bomb configuration and successfully functioned as it was dropped from a helicopter.

"The B61 contains the oldest components in the US arsenal," said Don Cook, NNSA deputy administrator for Defense Programs. "As long as the United States continues to have nuclear weapons, we must ensure that they remain safe, secure, and effective without the use of underground testing. The B61 has been in service a decade longer than planned, and our refurbishment program is a scientific and engineering challenge. These successful tests have given us confidence in our ability to integrate the new radar design and move forward with our efforts to increase the safety and security of the bomb."

The Nuclear Weapons Council, a joint DoD and DOE/NNSA organization established by Congress, moved the B61 Life Extension Program (LEP) from the planning stages to development engineering in February 2012. The scope of this LEP includes refurbishment of both nuclear and non-nuclear components to address aging, ensure extended service life, and improve safety, reliability, and security of the bomb. With the incorporation of a new Air Force tail kit assembly, the design will also enable consolidation and replacement of the existing B61-3, -4, -7, and -10 bombs by the B61-12 bomb. The LEP will reuse or remanufacture existing components to the extent possible.

This radar drop test is one of several critical milestones for the B61 LEP this year. Radar testing will continue with integration of other B61-12 components, including the weapon and firing control units to demonstrate the arming, fuzing, and firing subsystem. The LEP is an essential element of the US strategic nuclear deterrent and of the nation's commitments to extended deterrence and it ensures the continued vitality of the air-delivered leg of the US nuclear triad.



B61-12 TEST UNIT connected to a helicopter at the Tonopah Test Range in Nevada before drop. (Photo by John Salois, Navarro Research and Engineering)

First part from new plant was Sandia design

By Sue Major Holmes

Sandia and its production partners in Kansas City have celebrated a significant milestone: the first part produced at the new National Security Campus (NSC), managed by Honeywell Federal Manufacturing & Technologies, LLC.

The electronic component assembly, which goes into the firing subsystem for the W76-1 Life Extension Program (LEP), rolled off the line on April 25, nearly 64 years to the day from the April 21, 1949, date when the Kansas City Plant (KCP) produced its first-ever part, a bushing. The Sandia-designed firing subsystem goes into the integrated arming, fuzing, and firing system or AF&F, a major element of the W76-1 LEP for the US Navy's strategic submarine-launched ballistic missile system.

Production of the part at the new plant is an important step toward moving all manufacturing next year from the current plant to the new one, known by its abbreviation NSC, says Sandia senior manager Mark Rosenthal (2620).

"The new facility is amazing," he says. "It's totally modern and has state-of-the-art manufacturing systems to produce our non-nuclear components."

Mark, along with Sandia product realiza-



tion team lead Coby Davis (2615), former product realization team lead Pat Smith (2624), department manager Jim Klarkowski (2624), and NNSA officials, were on hand for a May 30 celebration at the NSC to recognize

the milestone by the plant's management and employees. The firing subsystem electronic component assembly and the original bushing held a place of honor at the ceremony.

The part has been in production at KCP since February 2007, when Pat and his team qualified the firing subsystem for the first time. Coby and quality engineer Tave Esho (0422) worked with the product realization team to make sure processes to build and inspect

the part were in place and qualified, Mark says. That allowed the new plant to go ahead with manufacturing the part, which passed all inspections and was accepted by NNSA.

A legacy of partnership

"The celebration was an opportunity to acknowledge the people who actually put it together at the plant, a recognition of the KCP employees who assemble it, test it, and inspect it," Mark says. "The other significance is that it also represents our design and production partnership legacy for nuclear weapon system non-nuclear components." Honeywell FM&T made a poster showing a picture of the assembly for Sandia engineering and management to sign to commemorate the event.

Starting production at the NSC while managing a complicated move from the old facility "speaks volumes about the talented employees of the KCP," said Shekita Robinson, NNSA Weapon Program management team lead. "The NNSA Kansas City Field Office congratulates the product team for their remarkable achievement."

The milestone culminates nearly two years of cooperative work with Sandia. Julie Stuckey, KCP senior manufacturing manager, and David Spieker, KCP senior technical manager, said many KCP employees from the test equipment, quality, engineering, inspection, and manufacturing areas made it possible.

"It would be difficult to pinpoint the exact number of employees who had a hand in this success," said Spieker, who said at least 27 people had specific roles. Stuckey said it was the first step in dual capability — production at both facilities — for the W76-1 firing subsystem. Products will be manufactured at both sites until early 2014, when the remaining processes move to the NSC, she said.

The first part produced at NSC also was significant for the Kansas City Responsive Infrastructure Manufacturing & Sourcing (KCRIMS), a commitment to a smaller, safer, and less expensive manufacturing plant that offers more operational efficiency and the flexibility to quickly meet changing production requirements.



COBY DAVIS (2615), firing subsystem product realization team (PRT) lead signs a commemorative poster for the first part produced at the new National Security Campus in Kansas City during a celebration in May. Standing left to right from Coby are Sean Shatto, KCP first level manager for firing systems; Benton Birkenmeier, KCP firing subsystem PRT lead; and Jim Klarkowski (2624), department manager for the firing system. The first-ever part produced at the Kansas City Plant in 1949 sits on the table in front of Coby.

'Together, we deliver'

Deputy Labs Director and Executive VP for Mission Support Kim Sawyer conducts all-hands meeting

By **Tim Deshler**

Together we deliver" was the overarching message of Kim Sawyer's all-hands meeting on Aug. 28. Kim, deputy laboratories director and executive VP for Mission Support, presented the vision statement to a full house at the Bldg. 810 Auditorium and via videostream, delivering a collage highlighting Mission Support's numerous functions and emphasizing recent strategic Mission Support accomplishments.

"What's important is to recognize that we are an integral part of this laboratory. Together we execute the mission with our mission technology partners. All that you do each and every day makes a tremendous difference in serving the nation and national security, so I thank you," Kim said.

Kim discussed Sandia's strategic plan and milestones, encouraging everyone to read them. The strategic plan is a tool for making decisions and prioritizing Labs investments, she said, and the milestones help ensure that Sandia is doing the things that are going to move the strategy forward.

Kim said that over the past year, Sandia's directors have worked with the Labs Leadership Team to make Strategic Objective 2—Amplify Our National Security Impact—more meaningful by examining and evaluating the Labs' missions against a common framework. Based on that analysis the leadership team has developed a model that will position the Labs to evolve in a manner that brings greater stability Sandia's broad national security role.

She also outlined a Mission Support strategy that focuses on four areas: finances, customers, processes, and work environment. Regarding financial strategy, she said the Labs is working to operate more effectively and efficiently, including exploring ways to create a more affordable cost structure and a more agile financial forecasting system.

Concerning customer satisfaction, Kim referenced E.F. Hutton, saying that when Mission Support has rec-



KIM SAWYER during Mission Support all-hands meeting. (Photo by Randy Montoya)

ommendations and advice, we want customers to listen and to accept and embrace what we have to offer. Providing superior execution and transparency without overwhelming customers with too much detail will continue to increase and strengthen customer satisfaction, she said.

Ensuring a positive environment

In the process area, Kim said Sandia is working to simplify its integrated management model through policies that are clear and easy to understand; employing fact-based decision-making by integrating data and going to a more predictive posture so that the Labs can shape the future; providing responsive service by set-

ting expectations so customers understand what and when we can deliver; and using Six Sigma and other processes to help reduce cycle times.

Ensuring a positive environment at the Labs was the final strategy Kim discussed. "We heard from you that you want to be able to understand the strategy of the laboratory, the strategy of the organizations, and how you align with them," she said. The key elements of this strategy include creating effective communications and performance alignment; leveraging differences and similarities; developing strategic skills and capabilities; and enabling employee safety, security, and health improvements.

Following her strategy discussion, Kim introduced Duane Dimos, acting VP for Science and Technology and Research Foundations Div. 1000, who shared a presentation of mission-side accomplishments and thanked the Mission Support team for its support of mission functions.

Members of the Mission Support leadership team gave brief overviews of their divisions, highlighting key functions and significant accomplishments from the past year and touching on goals for the next fiscal year. Several of the vice presidents incorporated the "together we deliver" message into their presentations, emphasizing how their divisions illustrate that vision.

"Every day, we deliver excellence, we deliver services, we deliver products, and so it's really a broad spectrum," Kim said. "And we think that's something that's going to help us come together and recognize that as individuals or as an organization, we are so much stronger when we work together."

Following a Q&A session that dispelled rumors that Sandia's Special Degree Programs would soon be terminated, Kim thanked Mission Support staff members for their continued efforts. "Keep the communication lines open," Kim said. "Tell us when you hear rumors or things that are bothering you. And do not — do not — be afraid to bring hard problems forward. Our job is to work through them with you."

State of the Labs

(Continued from page 1)

port from DOE and NNSA allow Sandia to steward the skills that produce mission success, Paul said.



PAUL HOMMERT

He said the leadership developed a set of capabilities for Sandia including high-reliability engineering, sensors and sensing systems, cyber technology, reverse engineering, micro and nano electronics and systems, modeling and simulation, natural and engineered materials, pathfinders, and safety, risk, and vulnerability analysis. These skills integrate Sandia's people, research, facilities, and tools, and are at the center of the Labs' foundation.

"This is Sandia. This is unique," Paul said. "This is an important, powerful list — a roadmap. This is why customers come here. We must reinforce the things we do that strengthen these capabilities."

"If you have a lab that does nuclear weapons, you will have a set of capabilities and foundations

that have the unique ability to bring value to other national security areas. Our capabilities are the lens through which we want the outside world to see the institution."

Paul talked about the importance of engineered safety, quality, and security to the Labs' work. He said engineered safety is not about procedures or checklists. "It's about the way you think about whatever you do. It's a fundamental shift in the way we think of safety."

Talking about security, he said, "We're getting better. There are a lot of new people at the Labs and a big increase in work. We need your help on this one. Our customers have every right to expect nothing but excellence here."

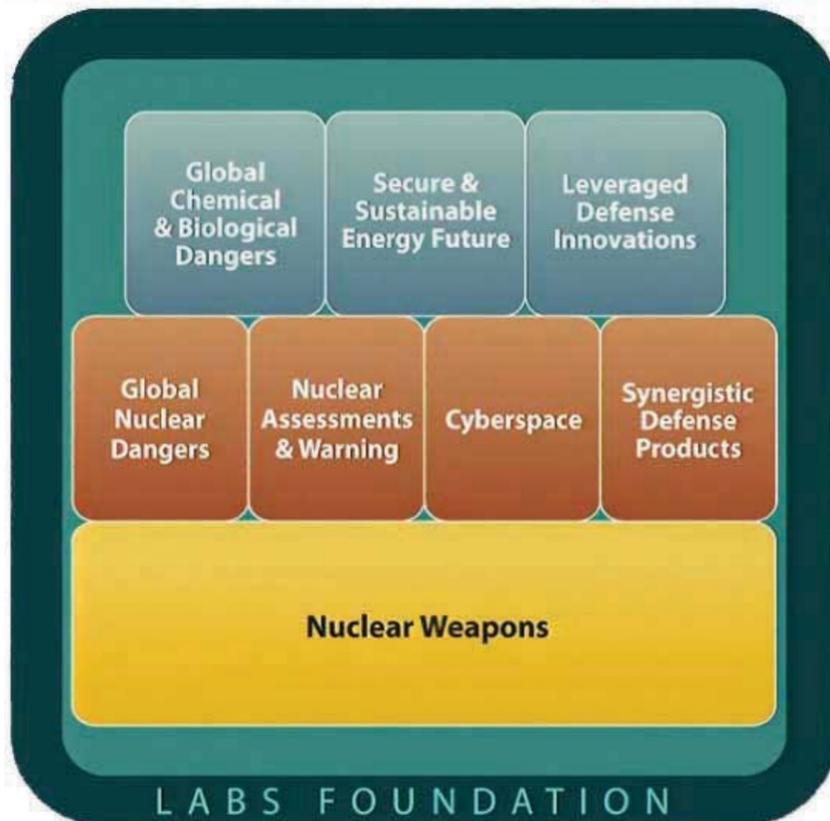
And he said Sandia is doing concrete things to "raise our game" on quality, including a more rigorous approach to training.

Paul said Total Comp, the Labs' performance evaluation and compensation system, has been "a big change, a hard change, and a necessary change." The key principles are transparency, market-based pay-for-performance consistency, and recognizing different skill sets. "Managers are more deeply engaged in understanding the system this year," he said.

Paul also talked about FY14 budget uncertainties, taking into account factors ranging from sequestration to the debt ceiling. He said there would be more information on the topic in the near future.

Paul concluded by listing accomplishments such as mission success, employee recognition awards, R&D 100 awards, new Sandia Fellows, national accolades, and the strong culture of philanthropy. "I have the privilege to represent the work you do to the senior leadership of the country," Paul said. "And for that and your generosity

Sandia's National Security Missions



"Our capabilities are the lens through which we want the outside world to see the institution."

Sandia President and Labs Director Paul Hommert

to the community, I thank you."

To view a recording of the entire State of the Labs presentation on Sandia's internal website (for members of the workforce only), go to <http://tiny.sandia.gov/k0cy7>.

NNSA Defense Programs Awards of Excellence

Two individuals and 14 teams were selected to receive NNSA Defense Programs Awards of Excellence at concurrent ceremonies this year in New Mexico and Sandia/California. The special guest speaker was Roger Lewis, NNSA Defense Programs (acting) deputy assistant deputy administrator for Research, Development, Test Capabilities, and Evaluation. The Defense Programs Awards of Excellence were created in the early 1980s to give special recognition to those at the laboratories and plants directly associated with the stockpile modernization program. Today, the awards honor exceptional contributions to the stewardship and management of the stockpile.

MARY ANN SWEENEY



Mary Ann Sweeney was instrumental in the formulation and refinement of the congressionally mandated Stockpile Stewardship and Management Plan (SSMP) during CY2012. The SSMP outlines the DOE/NNSA long-term plan to maintain a safe, secure, and effective US nuclear stockpile without the resumption of nuclear testing. Mary Ann volunteered in response to a Headquarters request for an extended detail to assist NNSA with the SSMP. Mary Ann played a significant role in the development and review as the chief editor for the SSMP. Mary Ann's science and technical background made her uniquely qualified to recognize inconsistencies, issues, and errors and effectively enhance the overall quality of the SSMP. Her efforts resulted in a significantly enhanced and integrated document that accurately reflects NNSA's 25-year plan and associated costs for the US nuclear weapons stockpile, supporting infrastructure, and workforce.

REX EASTIN



Rex Eastin is recognized as Sandia's foremost expert in the leadership and production of Joint Test Assembly (JTA) Telemetry (TM) systems. His comprehensive knowledge has been assembled over his 32-year career of delivering systems, leading teams, and working with internal and external customers. Notable recent responsibilities include serving as project lead for the W76-1 JTA TM system and the W88 ALT 370 JTA TM system, both high visibility, multimillion-dollar telemetry projects. In FY13, for the W88 ALT 370 TM, Rex manages an \$8 million budget, leads a team of five staff members, and is responsible for delivering five distinct instrumentation systems. Successful execution of these projects requires interfacing, collaborating, and communicating effectively with a diverse cross-section of laboratory staff, including internal customers, component groups, and support groups. He also works closely with external customers (NNSA, DoD), production agencies (KCP, PX), and other design agencies (LANL).



3D Hostile Shock Demonstration Test of a W88-0 Mass Mock AF&F Assembly Team

... for successfully performing the first simultaneous three-dimensional hostile shock test of a W88-0 Mass Mock Assembly using Light-Initiated High Explosives. This diverse team collaborated on the conceptual design of both the articulator and light array, made design modifications to accommodate fabrication constraints, and ultimately built both systems in-house. This successful test represents a new capability for the Light-Initiated High Explosives facility specifically, and for the Nuclear Weapons Complex in general. This team's success demonstrates Sandia's readiness to complete additional weapon systems AF&F tests planned for FY15 and FY17.

Team rep: Tim Covert **Members:** Marcus Alexander Chavez, Daniel M. Dow, Michael David Willis, Jared Bare



B83 ALT 753 Full-Scale Explosive Test Team

... in recognition of its successful execution of the B83 ALT

753 Full-Scale Explosive Test. This team designed, assembled, and conducted a full-scale hydrodynamic-like test at

Lawrence Livermore National Laboratory's Site 300 Contained Firing Facility in July 2012. This activity was key in the system integration of a new electronic neutron generator into the B83-1 bomb as part of the ALT 753 program. The test provided the highest-fidelity firing environments possible for verifying the functionality of the device. The ALT 753 full-scale explosive test presented several challenges that were successfully overcome as a result of the close coordination of this cross-site team.

Team reps: Gabriel A. Lopez-Diaz, Christy L. Turner, Stephen Bosson, **Members:** Herman O. Armijo, Steven Costa, Stephen Eisenbies, Jack Euske, John E. Friddle, Jolene R. Gilbert, Brian K. Holliday, Steven A. Hurd, Steven Ikebe, Jerry Inman, Stephan Lee King-Monroe, Barry M. McLaughlin, Bryant R. Morgan, Steven A. Neely, Curt A. Nilsen, April Nissen, Danny Rey, David B. Ross, Donald A. Sheaffer Jr., John M. van Scyoc, Jose T. Vigil, Hollie Voelker, Tanya L. Walbridge, Leroy L. Whinnery Jr., **External Members:** Norman Back, Brian Beach, Harvey Braswell, Michael Danforth, Todd Godchaux, Douglas Lahowe, Anthony Lee, Katy Lu, Paul McCandless, Richard Rose



Team reps: Rhonda A. Dukes, Cody Steele **Members:** Adolfo A. Bachicha, Carleen R. Bardwell Shirk, Emily Louise Barnhart, David Bishop, Mellie Rodriguez Cannady, Ian Cheng, Rosemary M. Duniyan, Lydia Marie Jordan, Jolyn Maheras, Shannon McConkey, Jessica Murillo, Mary Nolan, Donna S. Robertson, Paul Robert Sedillo, Krystal Danielle Sena, Michael Edward Somuk, Joseph T. Wharton **External Members:** Stephen Bass, Cheryl Burnam, Teresa Graves, Dennis Jeter, Brian Johnson, Marti Lucas, Sandra Maes, Aaron Perea, Jacquelyn Richardson, Earl Riggs, Ralph Tennant

Team Tonopah

... for outstanding mission accomplishment at Tonopah Test Range in support of Nuclear Stockpile Surveillance, and demonstrating ingenuity and innovation to overcome the challenges of a remote field site. Team Tonopah has employed innovative processes, developed interoperable interfaces coupling 50-year-old equipment with modern technology, and validated several modernization initiatives driving a technical transformation phase. Team Tonopah was resourceful in using equipment that was destined for the federal salvage yards to bolster range capability and successfully navigated an Operations and Maintenance contract transition in the midst of prime flight testing season without a single impact to operations, safety, or range readiness.

Team reps: Brian T. Adkins, Victor J. Johnson, Richard M. Scarine **Members:** Karen Renee Baca, Mark Coffing, Stephen A. Coffing, Adam R. Croker, Richard Crowder, James K. Daniels, Erick Matthew Diaz, Darrell G. Fong, Raymond H. Gabaldon III, Jim Galli, Vivian George, Rachelle L. Goebel, Lee William Goodrich, Patricia Gray, Vern L. Hermansen, Karl S. Hess, Todd A. Houchens, James D. Keagy, John W. Kelly, Gary W. Kirchner, Gene Littlefield, John F. Lorio, Robin Mitchell, Steven A. Neely, Steven E. Ohrt, Joshua Douglas Parsons, Thomas Post, James A. Rini, Mark T. Rule, Joseph Simile Jr., Mark A. Skobel, Roger A. Smith, Bryan Kenneth Struve, Glen Watts, Andrew Zeitler, Ray Behrens, Sperry Ben, Jody Bennett, Clair Blackburn, Jimmy Cardenas, Bernardi Dan, Mike Dellinger, Richard Douglas, Robert Elliott, Jerry W. Elliston, George Falkowski, Elizabeth Fitch, Bill Forston, Warren Goins, Jim Gromis, Scott Herman, Galli Jeff, Merlino Kenny, Ray Kretschmer, Thomas Ladner, Ron Lowndes, Jay R. McLaughlin, Danny Otteson, Tommy Otteson, Don Patton, David Quinn, Mary L. Quintana, John Salois, James Thibodeaux, Becky Tissue, Patricia Walker, Wilson William, Thomas Wilson



Sandia National Laboratories Systems Engineering Team

... for successfully executing a national security project in support of Defense Programs. This team has rendered a great service to NNSA Defense Programs and through its efforts, the US is safer and more secure. As part of a large multiagency team, these engineers designed, developed, qualified, and deployed a product that will greatly improve US nuclear security today and into the future. The team delivered in excess of NNSA's expectations and its efforts reflect great credit to themselves, the Office of Defense Programs, the National Nuclear Security Administration, and the United States of America.

B61-12 LEP Procurement Team

... for its innovation in Integrated Contractor Order process improvements. After experiencing a massive influx of Integrated Contractor Orders in support of Sandia's largest-ever nuclear weapons project, this team worked with Sandia Procurement Policies, Sandia Financial Support, Kansas City Plant, and the NNSA field offices to develop a new approach that allows work to occur without being interrupted by long lead administrative processes. This team saw an opportunity to greatly improve a floundering process for the weapons complex. The team innovated and created a process that is yielding much-improved results and will allow for future processing to continue in the interest of the Complex mission.

NNSA Defense Programs

AWARDS of EXCELLENCE

Calif. photos by Randy Wong N.M. photos by Lloyd Wilson & Norman Johnson

The B61-12 Refined WDCR Team

... for successful delivery of a refined Weapons Design and Cost Report, supporting Phase 6.3 Authorization of the B61-12 LEP. Fiscal limitations identified during the execution of Phase 6.2A for the B61-12 Life Extension Program precluded initiation of full-scale engineering development of the weapon design scope to identified requirements. Understanding this limitation, this team of Sandia engineers coordinated with NNSA and the US Air Force to update requirements to meet end-users' needs while allowing for a redesign of the weapon to more effectively use existing components and design that significantly reduced the weapon cost.

Team reps: Natasha Ann Bridge, James Cleary, David B. White **Members:** Deanna M. Agosta, Teh-Yao Peter Ai, Arden Anderson, Ephraim R. Arquitolola, Tony J. Baca, Carleen R. Bardwell Shirk, Anne E. Barnes, Emily Louise Barnhart, Nicolette C. Bauer, Cynthia Begay, Melvin Lamar Bennett, Eric Blair, Jamey T. Bond, Dale J. Brandt, William B. Chambers, Debra A. Chavez, Jeffery L. Cherry, Lauren Marie Cleavall, David Lee Damm, Thomas A. Denman, Joseph Dimambro, Kevin J. Dowding, Rhonda A. Dukes, Christopher Eiting, Michael L. Foley, Joe Fonseca, David J. Gelet, Nathan M. Glenn, Gordon D. Grimm, Darlene J. Hagerman, Bruce W. Hamilton, Magdalena Heise, Todd N. Hinnerichs, Thomas D. Hund, Michael J. Hurst, David Ingersoll, Tito Irizarry, Matthew C. Johnson, Lydia Marie Jordan, Terry Michael Josserand, Cotey S. Julian, Matthew T. Kerschen, Daniel Baker Kirkpatrick, Gregory Alan Kuehn, Jeanne G. Lewis, Art Logan-Condor, Candace Lugo, Ronald A. Maes, Julio P. Marchiondo Jr., Staci Renee Martin, Dominic V. Martinez, Jacob R. Martinez, Roman G. Martinez, Yvonne M. Martinez, Shannon McConkey, Christine C. Mitchell, Jeannette M. Moore, Jessica Murillo, James T. Nakos, Phu Duc Thanh Nguyen, Mary Nolan, Therese A. Ordonez, Sara North Pecak, David E. Peercy, Steven K. Showalter, John W. Weed, Louis S. Weichman, David E. Weigand, Douglas R. Weiss, David B. White, Tracy Lynn Brown Zullo, Marcus Avallone, Tracy Barela, Pamela Bell, Charles Boudreaux, Penny Clem, Patrick Foley, Malu Gawthrop, Robert Hindman, Esther Kuebler, Rebecca Kupay, E. Robert Lopez, Lindy Madrid-Smith, E. Bart Mann, Mark Smith, Robert Velasco, Dominic Vigil, Zachary Page, Pauline Pham, Barbara Reed, Leslie Rubottom, Ronald Schroeder, Gayle Schwartz, Frank Smith, J. Ambrose Wolf, Barbara Young



Cygnus Radiography Team

... for the successful and timely refurbishment of the CYGNUS X-ray radiography system in preparation for the scheduled subcritical experiments. As part of a multi-laboratory collaboration, Sandia completed a 9-month effort to refurbish the CYGNUS Dual Axis Flash X-ray radiography accelerator system at the Nevada National Security Site U1a facility. The refurbishment was in support of NNSA's stockpile stewardship sub-critical experiments program. The joint effort by Sandia, Los Alamos National Laboratory, and National Security Technologies required detailed planning and timely execution to stay off the critical path for execution of the subcritical experiments. The ultimate performance of the two accelerators was superb.

Members: Dan R. Bozman, Steve R. Cordova, David Mitchell, Bryan V. Oliver, Eugene C. Ormond **External Members:** Doug Good, David Henderson, Keith Hogge, Isidro Molina, Dan Nelson, John Smith



GIF Uncertified Sources Disposition Team



... for completing the shipment of 48 uncertified radioactive Cobalt-60 source pins from the Gamma Irradiation Facility to their final disposal site in Nevada. The disposition of the final 48 non-special-form Cobalt-60 source pins from the Gamma Irradiation Facility (GIF) in Technical Area 5 was a complex, multifaceted project involving several internal and external organizations. This team accomplished the disposition of the uncertified sources from the GIF, enabling the GIF to undergo a re-categorization to a below hazard category 3 nuclear facility, reducing the nuclear facility footprint at Sandia.

Team rep: Donald J. Hansont **Members:** Michael Kenneth Black, Mitchell Callahan, Paul Dixon, Bryan Green, George H. Hoskison, Maryla Aleksandra, Olszewska-Wasiolek, David Siddoway, Richard B. Simpson, Michael T. Spomer, Michael A. Torney, Don Alsbrooks, Anthony Baca, Nancy Collins, Kevin Cooley, Todd Erenstein, **External Member:** Michael Brown

Code Blue Stabilization Team

... for the successful recovery from the Code Blue emergency. After identification of a design challenge, this team rapidly demonstrated the robustness of the design modification and applied systemic quality assurance processes to bring production back to normal status in a brief seven-month period of time. This responsive and committed multi-site team, working long hours over a sustained period of time, was able to incorporate the design modification and resume production rates without impacting the US Navy customer's submarine fleet need schedules.



Team rep: Mark R. Platzbecker **Members:** Larry A. Andrews, Howard W. Arris, Lothar F. Bieg, Lauren Marie Cleavall, Stacey Michele Durham, Bruce D. Fishel, Mike Gannon, Gerald A. Gurule, Joanna Lewis, Tracy C. Peterson, Jerome A. Rejent, William Rhinehart, Lucas Edward Shiver, Danelle M. Tanner, Kyle R. Thompson, Jeremy A. Walraven, William Wilbanks, Terry Davis, James Deucher, Luis Lopez-Gaston, **External Members:** Ron Rodger, Keith Smithson, Alicia Gallegos, Stacy Kubasek

Technical Development Team for Sandia National Labs.

... for successfully executing a national security project in support of NNSA Defense Programs. In spite of financial uncertainty, aggressive schedules, and technical challenges, the Technical Development Team exceeded their customer's expectations. The team demonstrated dedication, technical expertise, teamwork, and flexibility throughout its efforts.

Tri-Lab Team for the NNSA 120-day study

... for its response to the NNSA 120 day Reentry System modernization study. NNSA initiated a 120-day study to explore concepts for interoperable reentry systems. The Sandia participants partnered with both physics labs to develop, document and build full-scale rapid prototypes of warhead concepts that use interoperable Nuclear Explosive Packages with adaptable non-nuclear components. Sandia supported the NNSA study by forming two teams and completed the systems integration for each of the pit-reuse and pit-remanufacture options generated by each physics lab. Both teams delivered exceptionally high quality, full-scale, rapid prototype models to NNSA headquarters. The outcome was uniformly praised for technical innovation and creativity.

Members: Jerry L. Adams, John Andersen, April Renee Barrick, Dante M. Berry, Edwin B. Bochenski, Glenn Arthur Bohan, Denise Gloeckner Bryson, Marco Antonio Carrillo Jr., Brian P. Cass, Jennifer P. Chan, Douglas M. Deming, Kenneth Eras, Neal Phillip Grieb, Robert G. Hillaire, Ryan A. Johnson, Walter A. Kruse, Scott Douglas Manwaring, Holly Mendonca, Brad M. Mickelsen, Bryn Miyahara, Robert D. Monson, Robert E. Oetken, Brian E. Owens, Maria Josephine Rosado, David Sadeli, Robert Shepherd, Alexander S. Tappan, Jeffrey L. Tong, Gregory L. Wickstrom, Mark Claudnic



W88 ALT 370 System/AF&F Team

... for engineering excellence in the completion of the Phase 6.2/2A study for the W88 ALT 370 program. This team achieved the Phase 6.2/2A study objectives within the cost and schedule targets specified by the

customers, but also developed a common/modular arming, fuzing, and firing (AF&F) system adaptable to the W78/Mk12A and the arming and fuzing elements in the W87/Mk21 system. The W88 ALT 370 accomplishments include the completion of the system and AF&F Customer Requirements Review, Conceptual Design Review, Weapon Design Cost Report, Gate A, B & C reviews, Phase 6.2/2A report, and the Joint Integrated Project Plan. The team submitted the required Weapon Design Cost Report at a total program cost below Sandia's original rough order of magnitude estimate.

Team rep: Danny L. Thomas **Members:** Ephraim R. Arquitolola, Georgia Artery, David Barr, Jimmy Brown, Sharon T. Del Prete, Jennifer S. Franklin, Jennifer F. Gilbride, Stacey Tran Glass, Arthur V. Houghton, Edward A. James, Irene R. Kolb, Heather R. Kraemer, Ying Liang, Jim J. Locklin, Marla M. Pohl, Melissa Jessica Prieto, Anthony John Radler, Gary T. Randall, Jeffrey A. Robinson, Jeffrey Ernest Salzbrenner, Robert Shepherd, Scott E. Slezak, Glen A. Smith, Debra Ann Tabor, Danny L. Thomas, Sharon L. Trauth, Joseph T. Wharton, Matthew Deller, Roger Weinke

W88 Contact Fuze Testing, Modeling, and Validation Team

... for outstanding contributions leading to the development of an impact fuzing model capable of predicting fuze electrical output as a function of impact conditions to support science-based weapon certification. The ability to utilize models to predict the electrical output of an impact fuze as a direct function of the mechanical impact conditions experienced by the carrier vehicle is critical to Weapon Qualification for Joint Test Assemblies. This team created a more realistic model of the component response within the re-entry body than has ever been realized before.

Team reps: George E. Clark, Daniel Peter Jackson Jr, Jack L. Wise **Members:** Heidi Anderson, Alfrrazier Davis, Chad E. Davis, Timothy Jesse Fuller, Christopher J. Garasi, Adam M. Green, Robert K. Grubbs, Randy J. Hickman, Jeffrey Ray Hill, Gordon T. Leifeste, Alan Mitchell, John A. Mitchell, William C. Moffatt, Anthony C. Montoya, Thomas S. Pehr, Joshua Robbins, Allen C. Robinson, Kevin D. Rolfe, Joseph A. Romero, John P. Witham, Michael K. Wong, Aaron Bowers, Nicole Cofer, Carole Etzler, Jesse Lynch, Greg Sharp, Andy Shay, Tom Thornhill



Z Science Operations Team

... for increasing the shot rate of the Z accelerator by 35 percent over that achieved in 2011, while simultaneously upgrading Z's capabilities, which enabled substantial achievements in support of NNSA programs. In 2012, this team conducted an astounding 177 Z-accelerator shots. This is the most ever on the refurbished Z, and a 35 percent increase over the number conducted in 2011. The team's tireless efforts proved to increase the shot rate, while simultaneously achieving 1 percent output-pulse reproducibility, even though the complexity of Z experiments increased substantially. The improved performance was enabled by numerous engineering and process improvements that were realized and implemented during the past several years.

Team rep: John L. Porter **Members:** Thomas Avila, Christopher Robert Ball, Eric Wayne Breden, Alan L. Carlson, Matthew David Christison, Michael E. Cuneo, Jean-Paul Davis, Daniel H. Dolan III, Greg S. Dunham, Aaron Edens, Dawn G. Flicker, Matthew R. Gomez, Roger L. Harmon, Daniel Ignacio Headley, Mark Herrmann, Brian Thomas Hutzel, Marc Ronald Lee Jobe, Drew Johnson, Alfred Dennis Jofola, Brent M. Jones, Michael Jones, Peter Andrew Jones, David Justus, Ryan James Kamm, Matthew Doyle Kernaghan, Andrew Kipp, Derek C. Lamma, Amy Renee Laspe, Scot Armstrong Lewis, Aaron Charles Lombrozo, Finis W. Long, Mike R. Lopez, G. Randall McKee, Jerry A. Mills, Robert Miltenberger, Thomas D. Mulville, Gabriel Olivas, Albert Owen, Stephen Ploor, James E. Potter, Shawn Radovich, Gregory A. Rochau, Scott Alan Roznowski, Mark E. Savage, Matthew Sceiford, Kelly Gene Seals, Christopher Speas, Decker Charles Spencer, Thomas Strizic, William A. Stygar, Michael Alex Sullivan, Peter Eric Wakeland, Ming Wu, Adam York, Lance Baldwin, Terrance Bock, Korbie Killebrew, Shawn White

Los Hispanos: *Sirviendo y Guiando Nuestro País con Orgullo y Honor*

Annual Hispanic Heritage Month event encourages diversity awareness

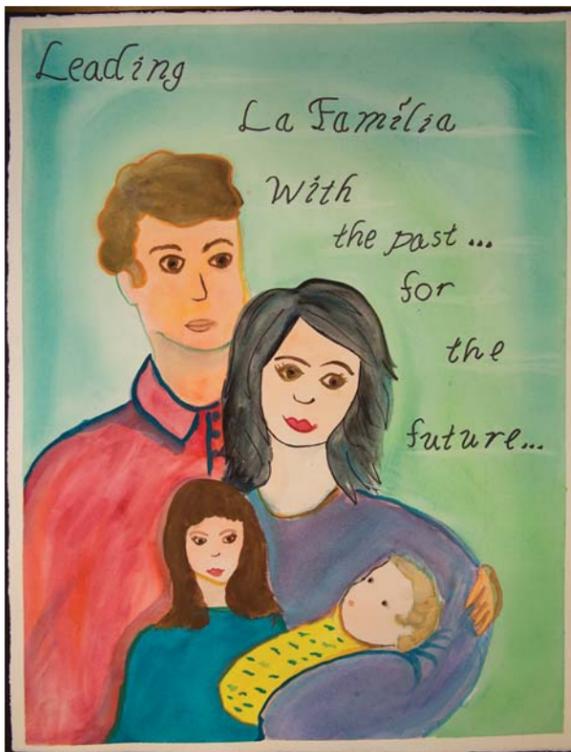
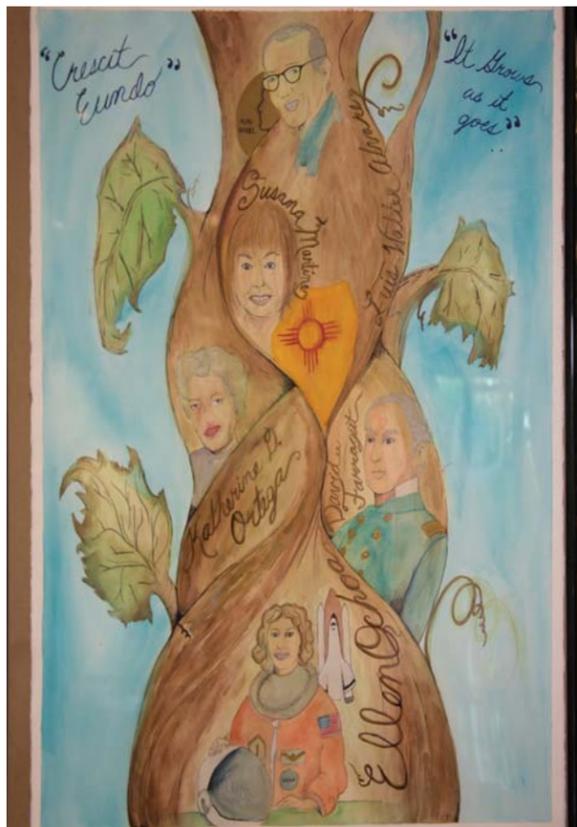
Story by Tim Deshler • Photos by Norman Johnson

It's become the largest annual diversity awareness celebration at Sandia — the Hispanic Heritage Month Diversity Awareness Event, to be held this year on Thursday, Sept. 26, from 11 a.m.-1 p.m. at Hardin Field. Sandia's Hispanic Leadership Outreach Committee (HLOC) organized this year's event in partnership with Kirtland Air Force Base, the NNSA Sandia Field Office, and the DOE Albuquerque Complex.

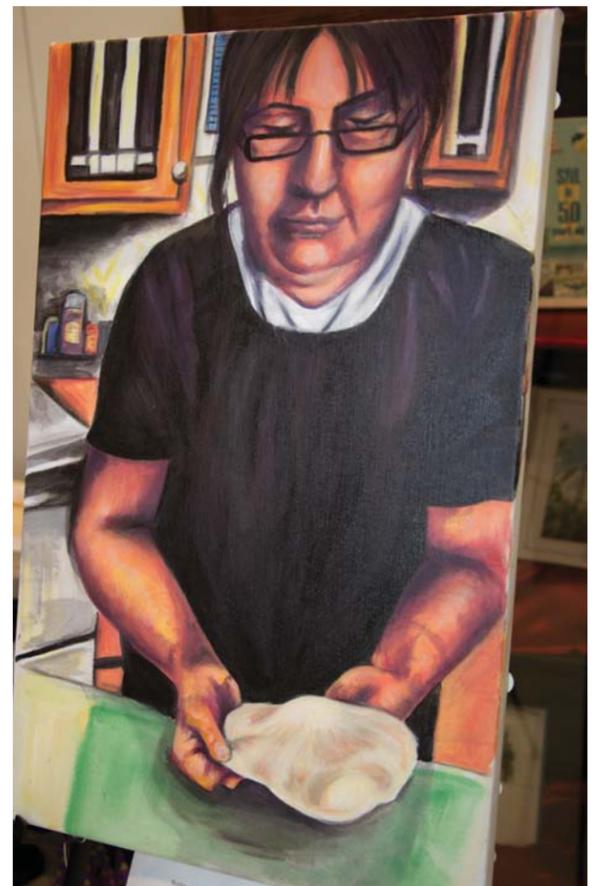
New Mexico Lt. Gov. John Sanchez will be the keynote speaker and will present the NM Youth Art Contest awards. While at Sandia for the event, Sanchez will meet with Pam Hansen Hargan, Sandia's vice president for Human Resources and Communications and HLOC executive sponsor, and with a few early-career Sandians. Part of HLOC's mission is to encourage Hispanic students to explore science, technology, engineering, and mathematics (STEM) fields, and to attract qualified students to Sandia careers.

Alice Muna (4879), an early-career Sandian in the Fire Protection and Assurance group, says "One of the reasons I was attracted to Sandia is because of the Labs' dedication to furthering the education of their employees." Alice completed her master's degree in fire protection engineering through Sandia's University Part-time program. "In addition, I was drawn to the many opportunities Sandia has available for engineers," she says.

The NM Youth Art contest is an annual event sponsored by HLOC. Students from around Albuquerque submit entries in three categories: grades K-5, 6-8, and 9-12. Students were asked to write a paragraph explaining how their artwork relates to this year's National Hispanic Heritage Month theme, "Los Hispanos: Sirviendo y Guiando Nuestro País con Orgullo y Honor" (Hispanics: Serving and Leading our Nation with Pride and Honor).



SAMPLES OF ARTWORK submitted for the NM Youth Art Contest exemplify the high level of talent represented in the annual competition, which has become a fixture of the Sandia celebration of National Hispanic Heritage Month. The winners will be announced at the Diversity Awareness event on Sept. 26.



Enjoy lunch from Garcia's Kitchen

Garcia's Kitchen will serve lunch during this year's Hispanic Heritage Month Diversity Awareness Event on Sept. 26. The menu includes red chile cheese enchiladas, green chile cheese enchiladas, a taco bar, refried beans, Spanish rice, biscochitos, tortillas, and a drink. Tickets for lunch are \$8 and must be purchased in advance.

To purchase tickets, contact:

- Bldg. 886, Rebecca Lopez
- Bldg. 899, Ashley Amparan Pena
- Bldg. 836, Pat Sena
- Bldg. 810, Josie Chavez
- IPOC, Renee Urquidez
- IPOC, Bernadette Garcia de Rodriguez
- Bldg. 6585, Lonnie Trujillo
- Bldg. 802/SFO, Jose Munoz
- Bldg. 960, Laveryn Apodaca
- Sandia Labs Federal Credit Union, Kirtland Branch

Volunteer judges were given criteria for evaluating the artwork, and the students' paragraphs were used to help determine the winners of close races. Judging took place on Sept. 12, and three winners were selected in each category. The winning artists and their families have been invited to be honored guests at the Hispanic Heritage Month event, where their artwork will be displayed, and they will get the opportunity to meet Sanchez. This year's winners will also be awarded a small scholarship and will receive tickets to the National Museum of Nuclear Science & History.

HLOC's annual Hispanic Foods Contest will be held during the event. Contestants can compete in any of the five categories: salsa, red chile, green chile, dessert, and otra comida (other). Judges will sample each entry and choose three winners in each category. Winners will receive a certificate of appreciation and bragging rights for the year. Following the judging, event attendees will get to sample the competing

dishes. Interested in entering the contest? Contact Ashley Amparan Pena (2994) to sign up.

Entertainment at the event includes cultural music performances by the Abel Lucero Band and a Flamenco dance performance by Tierra Amarilla New Mexico. Several members of the Abel Lucero Band are Sandia employees, and they are donating their time for the event. Sandia HBE will also provide salsa fitness demonstrations and attendees can earn 500 Virgin Health Miles for participating.

HLOC, chaired by Pat Sena (2110), is the largest of the six diversity committees at Sandia. In addition to sponsoring the annual awareness event and NM Youth Art contest, the committee also sponsors the Manos Program, a hands-on learning program for middle schoolers; sponsors mentoring for Sandia staff; and co-sponsors events for summer interns.

In keeping with Sandia's commitment to preserving the environment, compostable products will be used and the celebration will be a zero-waste event.



Katherine Guzman named a 2013 HENAAC Luminary

By Patti Koning

The Hispanic Engineer National Achievement Awards Corp. (HENAAC) recently named Katherine Guzman (8114) one of its 2013 Luminary honorees. She will receive her award on Friday, Oct. 5, at the 25th Anniversary HENAAC Conference in New Orleans.

"This is an incredible honor," says Katherine. "I remember going to the HENAAC awards ceremony as an undergraduate and looking up at the award winners with awe, never imagining that one day I might be considered for such an award."

Luminary honorees represent professionals in science, technology, engineering, and mathematics who initiate, collaborate, and lead key programs and research in their companies. These individuals have made significant contributions to the Hispanic technical community as leaders and role models.

"Dr. Guzman truly embodies our core values," says Todd West (8114), Katherine's former manager. "She consistently executes and leads high-quality work in the face of sometimes challenging and ambiguous environments. She manages effective teams and fosters an attitude of mutual respect. Her outreach activities are equally exemplary. In short, Dr. Guzman is an ideal role model for others considering a career in science, technology, engineering, or math."

Creating new tools

At Sandia, Katherine has distinguished herself with her work in the area of risk management. She played a key role in the development of SUMMIT (Standard Unified Modeling, Mapping, and Integration Toolkit), a new technology to enable emergency management personnel — emergency responders and decision makers — to seamlessly access information from diverse models and data coming from different sources. The creation of these tools is now enabling the Department of Homeland Security (DHS) to rigorously plan for and exercise against highly complex disaster scenarios, including detonation of an improvised explosive device in a major metropolitan area, a major earthquake in regions with multiple intersections with critical infrastructure, and a national-level cyberattack.

Katherine is now leading a Sandia effort to define new risk assessments for DHS, work that could shape the way the nation understands and attempts to mitigate the risk of terrorist attacks. The goal is to create risk assessment methodology that is simple and transparent, yet defensible scientifically. This work must effectively bridge the gap between academic risk management theory and the practical problem of national security risk management. One challenge is addressing a complex problem in a meaningful manner to decision-makers.

Service and science

Katherine says science was part of her upbringing. "My father is a scientist and he raised me and my sisters the way he was raised — to ask a lot of questions," she says. "He spent a lot of time explaining to us the how and why of everything."

Her future in mechanical engineering became apparent at a young age. "I was always more interested in building furniture for my dolls than playing with the dolls themselves," says Katherine. "Making things was what fascinated me."

As a college student at the University of Texas at Austin, Katherine took the opportunity to study abroad in Peru, her mother's native country. Her parents met when her dad was a Peace Corps volunteer in Peru, so her mother moved to the United States as an adult. "This was a chance for me to connect with my mother's family and really understand where she came from," says Katherine.

Katherine earned her PhD in mechanical engineering at the University of California, Berkeley. As both an undergraduate and graduate student, she found herself one of few women and even fewer



KATHERINE RECOUNTS HER EXPERIENCES in graduate school as part of the PhD journey panel at a recruiting event for science and engineering undergraduate students. (Photo by Dino Vournas)

Hispanic women.

When it came time to consider where to begin her career, service was at the front of Katherine's mind.

"My father served in the Peace Corps and my mother was a social worker, so I was raised with a very keen sense of making a contribution to the world," she says. "My dad is an agronomist and he felt that he, as part of a large community of scientists, was helping to solve world hunger through his work. That's a pretty noble cause to go to work for every day. So coming to Sandia was a natural choice because our work has true national impact."

One of the things Katherine loves about her work at Sandia is that there is no perfect solution to the problems she is trying to solve. "Managing risk is a really tough problem and I enjoy wrestling with that," she explains. "I enjoy the stimulating discussions as I work with colleagues to pick apart the problem and chip away at it. I find this very fulfilling."

Katherine is also driven by a personal passion to help minorities and women in science and engineering achieve their career dreams. As an undergraduate and graduate engineering student at two of the country's largest and most prestigious universities, she encountered very few female and minority role models and virtually no female minority role models. That is something she hopes to change with her work as a leader, mentor, and keynote speaker.

A role model in the community

"Katherine is a role model within both the Hispanic and women in engineering communities, at local, regional and national levels," says Peter Davies (6200), director of Nuclear Energy and Fuel Cell Programs. He worked closely with Katherine in his previous role as director of Homeland Security and Defense Systems Center 8100.

Outside of work, Katherine stays busy with her husband and two young sons. As a family, they enjoy camping, nature, and baseball. Over

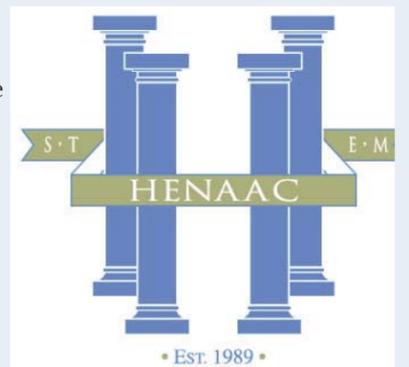
the past summer, they hit a number of major league ballparks — the San Francisco Giants and Oakland A's, naturally, along with the LA Dodgers, San Diego Padres, Chicago Cubs, and St. Louis Cardinals.

"Balancing work with family and community is important to me," says Katherine. "I want to instill in my sons the values I was raised with — hard work, the value of education, the importance of community, and respect for everyone."



About HENAAC

From the HENAAC website: The first HENAAC conference was held in 1989 as a means of identifying, honoring, and documenting the contributions of outstanding Hispanic American science, engineering, technology, and math professionals. Over the past 24 years, the conference has evolved to encompass many additional activities including honoring students;



providing opportunities for student leadership development; conducting a career fair where both students and professionals can look for employment; and a forum where top leaders of representing corporations, government agencies, academic institutions, the military, and the business community-at-large can discuss and implement change for the betterment of our country and the Hispanic community's involvement in STEM.

Hard cold work and unsung research heroes

By Neal Singer

The Sierra went down over the Arctic Ocean on the morning of July 26, about 60 miles from the northernmost tip of North America. One moment the unmanned aerial vehicle (UAV) with its 20-foot wingspan was up in the sky, gathering “hard” data over frozen terrain to help climate simulators in comfortable offices make predictions about climate change. The next moment, the little aircraft was gone.

“Just as I walked into the ground control station,” says Darin Desilets (6913), “a gentleman from NASA was calling in to air traffic controllers in Deadhorse [a nearby settlement], ‘Flight terminated.’”

The ground control station is at Oliktok Point, the northernmost point of oil-rich Prudhoe Bay on Alaska’s North Slope. The station consists of a series of well-insulated but otherwise commonplace trailers from the 1950s that provide living quarters for researchers. The site’s other feature is an aging hangar in which UAVs can be housed, along with land-based monitoring equipment being assembled to detect features like cloud height, incoming and outgoing radiation, and other factors of climatological interest. The facility, owned by the Air Force, is used by Sandia for DOE’s Atmospheric Radiation Measurement (ARM) program, and provides a launching point to restricted airspace for scientific experiments.

‘Try doing our work somewhere else’

“Climate simulators don’t think about how difficult it is to get the data their supercomputers use,” says Darin, “but they need that data to develop or even validate how the climate system works.”

Oliktok Point, as inaccessible as it is, has the infrastructure to support the frigid research. Oil companies that lease the peninsula require visitors to be badged to use the roads and have limited interest in supporting climate research, but their strong financial presence means forklifts and other equipment can be leased in Deadhorse and there’s an airport on the Arctic Ocean with several flights a day. “Try doing our work somewhere else,” Darin says.

The Sierra’s mission was focused on monitoring something called “the sea/ice margin,” the point at which the solid ice of the frozen north thaws into open sea. This line moves with the seasons and changes each year.

“This event underscores just why unmanned aircraft are so important in the Arctic,” says Darin. “The big deal would be to have a manned aircraft go down on the ice or, worse, in that almost 0 degree C water.”

Another aircraft flew over the crash site’s presumed coordinates two days later and saw open water with some ice chunks, indicating the disabled aircraft had probably sunk.

Says Sandia project lead Mark Ivey (6913), “In talking with our team members who were at Oliktok after the loss of Sierra, they said the NASA team took the loss in stride. Losing an unmanned aerial system (UAS) is a calculated risk, a risk that goes up in the Arctic. They are talking seriously about returning with a new UAS next year

or the year after.” Mark negotiated user agreement hurdles for NASA’s experiments to be run at the site.

Sierra is an acronym for Sensor Integrated Environmental Remote Research Aircraft. The small machine was designed by the US Naval Research Laboratory and developed at NASA’s Ames Research Center in Moffett Field, Calif., to perform remote sensing and atmospheric sampling in isolated and often inaccessible regions. It did not require a large runway. Among the achievements that could be inscribed on its watery tombstone, it was the first civilian UAV to be allowed use of ground radar for sensing and avoidance, and the first to be granted a reserved altitude to fly safely from restricted to open airspace. “Synchronizing with these FAA (Federal Aviation Administration) procedures should make it easier to fly UAVs from Oliktok in the future,” says NASA project manager Matt Fladeland.

Two other UAVs flew successful missions for several weeks with operations concluding on Aug. 9. Sandia personnel who monitor the barren, windswept site in six-week sessions keep equipment running, help translate

flight plans into NOTAMS (Notices to Airmen), ensure correct information is broadcast about activation or deactivation of the restricted area, and help resolve potential conflicts with local aviation concerns over airspace use.

Polar bears provide strong reasons to ignore any impulse to jog, says Jerry Peace (2127), another member of the Sandia Oliktok team.

As the poet John Milton put it, “They also serve who only stand and wait.”

About the program logo: The Sierra, featured in the logo above, was an exploratory UAV in the Marginal Ice Zone Observations and Processes Experiment (MIZOPEX), a NASA-funded research project headed by the University of Colorado at Boulder to explore changing Arctic conditions. Sandia worked with the FAA to provide access to otherwise restricted Arctic airspace for the project.

(Design by Tia Crocker and Ian Crocker)



CLIMATE MEASUREMENT STRATEGY at Oliktok Point has three basic aspects, according to Fred Helsel (6913), Sandia’s Oliktok team leader:

- Extensive airborne surface mapping, repeated frequently over sufficiently large areas, to accommodate comparisons with satellite-derived sea surface temperature and sea ice data sets.
- Sustained, continuous observations of ocean surface, subsurface, and atmospheric conditions over tens of hours, sufficient to investigate sea ice/atmosphere interactions and obtained at spatial scales orders of magnitude finer than provided by satellites.
- Repeated visitation to locations within the drifting ice pack, allowing tracking and observations over a period of weeks to assess how specific portions of the ice pack evolve over the summer.



Research team members prepare the Sierra unmanned aerial system for flight from Oliktok Point. (Photo by Mark Ivey)

David Osborn receives Lockheed Martin NOVA Award

By Patti Koning

Chemist David Osborn was recently awarded a Lockheed Martin NOVA Award, which honors individuals who have made outstanding contributions to Lockheed Martin's mission and business objectives in the four categories of exceptional service, leadership, teamwork, and technical excellence.

David received a Technical Excellence Award for his groundbreaking methods in multiplexed chemical analysis, particularly synchrotron photoionization mass spectrometry, yielding breakthrough insights into combustion and Criegee intermediate chemistry.

His innovations in the analysis of chemically reacting systems, culminating in his development of the multiplexed chemical kinetics reactor that operates at the Combustion Research Facility (CRF) and at the Advanced Light Source in Berkeley, have enabled world-leading scientific discoveries. David recognized that the power of tunable synchrotron radiation and multiplexed mass spectrometry



DAVID OSBORN

LOCKHEED MARTIN



try could be combined, and that the combination could allow new ways to study many isomer-specific reactions important in combustion. The instrument that resulted from this insight has expanded the frontiers of chemical kinetics as a resource to many scientists in the DOE/Basic Energy Sciences (BES) program, and to national and international collaborators studying the atmospheric chemistry of earth and Saturn's moon, Titan.

Using this novel technique, David and his group have explored "reaction trees" of molecular weight growth chemistry — how small fragments of fuel molecules react to form aromatic molecules that start the pathway toward soot formation in flames.

"Our ability to follow reaction sequences lets us observe multiple reaction pathways simultaneously, like the trunk of a tree splitting into a few large branches, which in turn spawn even more small branches," he says. "We can then start the reaction on each specific branch and confirm how that subset of the reaction tree is built. At the same time, the spectroscopy we use tells us the arrangement of atoms in each molecule, providing important clues to define the mechanism of each reaction."

In a different arena, David and collaborator Craig Taatjes (8353) used the chemical kinetics reactor to

make the first direct measurement of reactions of Criegee intermediates, important but elusive species in tropospheric oxidation. The isomeric specificity of David's photoionization method was critical to isolating and measuring these reactions. Particularly important was the discovery that Criegee intermediates, formed by the reaction of ozone with hydrocarbons, react up to 10,000 times more rapidly with sulfur dioxide than models had presumed. This finding has the potential to dramatically change tropospheric models of sulfate chemistry, which may relate to atmospheric aerosols and climate forcing.

As David notes, "It is exciting to see the explosion of new experiments around the world that our work has catalyzed, which will improve the rigor of atmospheric models in the near future. These discoveries are a testament to the value of curiosity-driven, fundamental research that DOE/BES has cultivated for decades. I am very grateful for their support and my stimulating colleagues in the CRF and beyond."

In 2012, David and Craig shared the David Shirley Award from the Advanced Light Source for the Criegee breakthrough. In 2010, David received a University of Colorado JILA Visiting Fellowship and the CRF O. W. Adams Award for Outstanding Achievement in Combustion Science.

Sandia hosts NNSA's first National Science and Security Consortium Minority Serving Institution student

By Patti Koning

Zach Strater, a junior at St. Mary's University in San Antonio, spent his summer evaluating neutron detectors at Sandia. He came to the Labs through a fellowship from NNSA's National Science and Security Consortium (NSSC), a multi-institution consortium led by the University of California, Berkeley.

The consortium partners — Michigan State University; UC Davis; UC Irvine; the UC Institute on Global Conflict and Cooperation (IGCC) based in San Diego; the University of Nevada, Las Vegas; and Washington University in St. Louis — are collaborating with three DOE laboratories in addition to Sandia: Lawrence Berkeley National Laboratory (LBNL), Lawrence Livermore National Laboratory (LLNL), and Los Alamos National Laboratory (LANL). The consortium also brought in a wider network of affiliates from minority serving institutions (MSI). Zach is the first NSSC-MSI student fellow to be placed at a national laboratory.

Zach's work supported the Mobile Imager of Neutrons for Emergency Responders (MINER) project, which is developing a portable fast neutron scatter camera for emergency response applications. Mark Gerling (8132), one of the designers of MINER, served as Zach's mentor.

Thermal neutron systems based on Helium-3 are frequently the detectors of choice when searching for special nuclear material. Helium-3 detectors are very efficient for measuring the gross neutron count rate, but because they slow down the neutrons to thermal energy to detect them, most of the information about the neutrons is lost.

MINER uses multiple liquid scintillator (LS) cells coupled to photomultiplier tubes and is sensitive to neutrons in an energy range characteristic of a fission spectrum. The data acquisition of MINER captures and analyzes the time-dependent output of each photomultiplier tube to determine if each pulse of light in the LS cell resulted from a gamma ray or neutron interaction. The sum of all neutron-like interactions from the 16 LS cells is the gross neutron count rate that can be compared to the Helium-3 backpack detection system. MINER, however, can also analyze the data from all LS cells to look for signatures that would be characteristic of a single neutron interaction in two different LS cells (i.e., a double scatter event). By analyzing the data associated with these double-scatter events, both a low resolution image and energy spectrum of the emitting source of neutrons can be created. This additional information is not available with Helium-3 backpack detectors.



NNSC INTERN Zach Strater and his mentor Mark Gerling discuss Mobile Imager of Neutrons for Emergency Responders (MINER). While at Sandia last summer, Zach evaluated how the performance of MINER compares with conventional He-3-based detectors. (Photo by Dino Vournas)

"We are often asked how MINER compares to a Helium-3 detector," says Craig Tewell (8132), manager of the Rad/Nuc Detection Systems group. "Zach has spent his summer working on that comparison." So far, says Zach, the data for MINER looks promising.

The summer has had a big impact on Zach — he's now considering graduate school. "Before I came here, I had no interest in graduate school," he says. "But now I'm seriously considering a PhD because I now see how it opens up so many different options and allows you to become quite specialized within a field."

Sandia is involved in two additional NNSC projects. UC Berkeley graduate student Patricia Schuster is working with both LLNL and Sandia on an NNSC-funded

project to understand the anisotropic light emission from crystalline organic scintillators. Mark Allendorf (8600) and Patrick Doty (8131) also received an NNSC grant to work with Clark University professor Conrad Ingram on advanced materials radiation detection.

The goal of NSSC is to support the nation's nuclear nonproliferation mission by focusing on the hands-on training of undergraduate and graduate students in the fields of nuclear physics, nuclear and radiation chemistry, nuclear engineering, nuclear instrumentation, and public policy. Sandia played a role in helping UC Berkeley win the proposal to lead NSSC through its connections with the university's nuclear engineering department. (*Lab News* 8/12/2011)

Sandia CaliforniaNews

New health insurance marketplace coverage options and your health coverage

Notice of Exchange to be released Oct. 1

Due to healthcare reform, Sandia is *required* under provisions of the Affordable Care Act (ACA) to provide a Notice of Exchange (titled New Health Insurance Marketplace Coverage Options and Your Health Coverage) to all employees. The purpose of this Notice is to inform all employees of health insurance exchanges beginning Oct. 1, 2013. Employees can purchase individual health insurance, with coverage effective Jan. 1, 2014.

Important: Sandia will continue to offer employer-sponsored coverage, Sandia Total Health, through UnitedHealthcare, Blue Cross Blue Shield of New Mexico, and Kaiser Permanente in 2014.

Sandia's 2014 benefit choices open enrollment period is Monday, Oct. 28, through Thursday, Nov. 14.

What is a 'health exchange'?

An "exchange" is the new centralized state or federally operated health insurance market. The terms "health insurance marketplace," or simply "marketplace" and "exchange" are used interchangeably. If an individual is interested in purchasing individual health insurance, he/she would go to the exchange to select a new plan.

The ACA's health insurance exchanges are meant to be virtual marketplaces where individuals and families can comparison shop for health coverage. The exchanges will be most useful for those who don't have access to employer-based coverage, and who don't qualify for such public programs as Medicaid.

What are the types of plans in the exchange?

There are four categories of Exchange Insurance Plans: Bronze, Silver, Gold, and Platinum. The category affects how much the premium costs each month and what portion of the bill is paid out-of-pocket. The Bronze plan is the most basic and the Platinum plan is the most comprehensive. In general, the lower the premium, the higher the out-of-pocket costs are when care is needed; the higher the premium, the lower the out-of-pocket costs are when care is needed.

Levels of coverage:

1. Bronze Plan (most basic) — Average plan pays 60 percent of enrollee's total cost. Enrollee is responsible for 40 percent of total costs.

2. Silver Plan (slightly more comprehensive) — Average plan pays 70 percent of enrollee's total costs. Enrollee is responsible for 30 percent of total costs.

3. Gold Plan (comprehensive) — Average plan pays

80 percent of enrollee's total costs. Enrollee is responsible for 20 percent of total costs.

4. Platinum Plan (most comprehensive) — Average plan pays 90 percent of enrollee's total costs. Enrollee is responsible for 10 percent of total costs.

Please Note: Relative to these designated federal levels of coverage, Sandia Total Health is generally equivalent to the Gold Plan (comprehensive) level.

What does this mean for me and my family?

The Department of Labor requires Sandia to send the Notice of Exchange to all employees (regardless of eligibility and enrollment) by Oct. 1, 2013, so that each employee is informed of the exchange.

The Notice of Exchange has two distinct sections: **Part A** and **Part B**. Part A provides general information on the exchange, eligibility requirements, and dates for the open enrollment period. Part B provides additional plan information from an employer that is required if an individual applies for coverage through the exchange. Part B also establishes whether or not an employer's insurance plan is considered "affordable" or "unaffordable." This is determined by whether the employer's lowest health plan cost (the premium that the eligible employee pays) exceeds 9.5 percent of the employee's total household income.

The exchange offers a **subsidy** to individuals or

Note: Notice of Exchange is not required to be sent to retirees.

families based on family size and income. A subsidy would allow for lower monthly premiums and lower out-of-pocket costs. This subsidy program is not available to Sandia employees because Sandia offers job-based coverage that meets minimum affordability and value (will pay at least 60 percent of the total cost of medical services).

During this open enrollment season, Oct. 28 through Nov. 14, employees have the option to choose either a healthcare plan offered through the exchange or an employer-offered plan for coverage beginning Jan. 1, 2014; individuals cannot be enrolled in both plans. If an individual elects coverage under the exchange, by Oct. 1 he/she will need to set up an account at www.healthcare.gov and provide information about his/her current coverage, which is available in Part B of the Notice of Exchange.

How does Sandia Total Health compare with an Exchange plan?

Some of the primary similarities and differences are listed below:

Sandia Total Health (STH) Plan	Exchange Plan
Meets employer mandate requirements of affordability and minimum value.	Not eligible for subsidy since employer offers a plan that meets requirements of affordability and minimum value.
Premium is paid with pre-tax dollars and with employer contributions.	Premium is paid with after-tax dollars and is 100% paid by employee.
Premium is pre-determined based on coverage tier (employee only, employee + spouse, employee + family, and employee + child(ren)).	Premium for Exchange plans could potentially be 3 times higher than Sandia Total Health premiums based on location, age, family size, tobacco use, and coverage tier.
Participation in wellness programs like Virgin HealthMiles offsets employee cost share by contributing to a Health Reimbursement Account (HRA).	Wellness programs are not available.

To learn more about the health insurance exchange and Sandia Total Health, go to hbe.sandia.gov.

Mileposts

New Mexico photos by Michelle Fleming



Michael Pasik
20 432



Janis Trone
20 6211



Donald Bradley
15 1833



Ken Callahan
15 4121



Norma DeAnda
15 9548



L. Lynnwood Dukes III
15 10260



John Gonzales
15 4844



Toni Leon Kovarik
15 10222



Craig Lawton
15 6133



James McElhanon
15 1835



Craig Nakakura
15 5644



Mike Overstreet
15 2547



Rene Ramirez
15 2953



Terry Reser
15 3330



Ken Struve
15 5443



Jeremy Walraven
15 1755



Woody Woodstra
15 5338



Stephen Zenker
15 9341



Eye on the world

VP Jill Hruby brings executive know-how to international association

By Nancy Salem

The logo of the Albuquerque International Association (AIA) sets a high bar. In New Mexico's state colors of turquoise and gold, a world globe forms the center of an eye. "We wanted to start very modestly," deadpans the group's president, Marina Oborotova. "It's Albuquerque looking at the world."



The association's goal is to internationalize the city by building public understanding of the world through an international lecture series, world affairs and business discussions, book and movie clubs, international cuisine club, and trips abroad.

Oborotova says the AIA brings "sparkle" to the city. "It brings vibrancy and intellectual challenge," she says. "It allows us to be in tune with international trends. Albuquerque is not a city at the end of the world. If we want to be first rate we can make it happen."

That mission caught the attention of Div. 6000 VP Jill Hruby, who joined the AIA board about a year ago. "The interesting thing for Sandia is the tie we have programmatically to the things the AIA wants to do," she says. "They provide excellent speakers who address world events that impact our national and international security."

Jill says the organization speaks and appeals to Sandians, who have been involved since its founding. "The topics are interesting in terms of national security," she says. "The concept of having a knowledge-



SANDIA DIV. 6000 VP JILL HRUBY, right, and Marina Oborotova, president of the Albuquerque International Association (AIA) visit before a recent AIA Board of Directors meeting. "There is a positive energy there," Jill says of the organization. "I wanted to help them figure out how to expand strategically and attract even more Sandia employees and retirees."

(Photo by Randy Montoya)

able, intellectual seminar series outside the lab and interacting with others is appealing."

The AIA reaches out to students through its Global Skills for Young Adults program, which gives high school and college students free access to its programs, and some course credits. "There's a strong educational component. It's about building the next generation of people interested in the world," Jill says.

She says she joined the board for philanthropic reasons and because the AIA's objectives are "compelling for Sandia and the city of Albuquerque."

"There is a positive energy there," she says. "They wanted somebody who could bring executive thinking to the board to help take the organization to the next level. I wanted to help them figure out how to expand strategically and attract even more Sandia employees and retirees."

She says an interesting cross section of Albuquerque is represented on the 12-member board. "It's a great opportunity to meet and get to know people in the broader Albuquerque community who are interested in international affairs," she says. "I enjoy getting more involved in the community and showing my commitment to the city."

The crème de la crème

The nonprofit AIA was created in 2007 by the Center for International Studies. It has seven programs designed to build a vibrant intellectual environment in foreign affairs, international business, culture, and art.

The AIA is best known for its lecture series, which offers talks within broad themes such as New Protest Movements, Emerging Generations and Political Change; Immigration Around the World and What We Can Learn from It; Critical Countries, Critical Issues; Terrorism Update; Corruption Around the World; Emerging Powers; Foreign Policy Challenges; and Latin America in the 21st Century. Two series are offered each year with up to eight lectures in each.

The fall series examining Beyond Al-Qa'ida: Different Faces of Political Islam and Why It Matters to Us launched in August.

"The AIA invites the crème de la crème, the best experts and speakers in the country," Jill says. "It's an extremely interesting lecture series with themes that are important to the United States and New Mexico."

The AIA also offers dinner talks about once a month. Upcoming topics are New Trends in Global Education,

by Mary Anne Saunders, University of New Mexico President Bob Frank's special assistant on global initiatives; and the Galactic Real Estate Market: Astrobiology in Our Solar System and Beyond, by Penny Boston of the New Mexico Institute of Mining and Technology.

The lectures and dinner talks are open to the public and held at various venues. Members-only events include international cuisine, foreign movies, and book clubs held at private residences. "These are very special events with great food and deep discussions," Oborotova says. "They fill up very fast."

And the association does an annual foreign trip to places like Russia, Peru, and, next year, Brazil.

Pertinent to Sandia's mission

The AIA has about 330 individual members with a goal of growing to between 500 and 1,000. Corporate members include Sandia, whose employees can attend events at member prices.

Sandia retiree and long-time AIA member Frank Figueroa says the themes are intellectually stimulating and pertinent to Sandia's national security work. "To be informed on these issues at a level available to every Sandian is extremely important," he says. "It helps them do a better job."

Oborotova says Jill brings great ideas to the AIA. "She's very busy but follows closely what is going on in the world," Oborotova says. "She's a good listener, and when she speaks she generates bright, out-of-the-box ideas. She adds strength to the organization."

Oborotova made Albuquerque home

Marina Oborotova, a native of Moscow, Russia, has had four careers. She earned a PhD and worked as a senior researcher with the Institute of World Economy and International Relations, a think tank in the former Soviet Union. Fifteen years later, in 1992, the University of New Mexico invited her to teach history, political science, and classes in the Latin American and Iberian Institute.



MARINA OBOROTOVA

She later worked for two Albuquerque companies that had operations abroad. Heading the AIA is her fourth career. "I was sitting and thinking that I had been in Albuquerque such a long time, I wanted to do something for the city," she says. "The idea of the AIA came very quickly. It's what I could do."



For more information on the Albuquerque International Association and a list of upcoming events visit www.abqinternational.org