Never-before-told stories offer insights into nation's nuclear weapons program

Documentary features interviews with key engineers, policymakers

In the years after World War II, when the nation's policymakers determined the US would rely heavily on nuclear weapons as an essential strategic deterrent, they wanted assurances on two fronts: 1) that the weapons in America's stockpile would always work if called upon; and 2), that the weapons would never, could never, detonate unintentionally, either as a result of accident, equipment failure, or even human malfeasance.

The quest to develop the technologies and procedures that would provide those assurances to policymakers is the story, often epic in scale and decades in the making, of scientists and engineers grappling with challenges no one had ever dealt with before, solving problems no one had ever thought about before, and coming to understand and manage fundamental forces of nature in ways that had never been done before.

The *Always/Never* documentary (with introductory comments by Div. 1000 VP Steve Rottler) will be screened for a Labs-wide audience at the Schiff Auditorium Tuesday, Feb. 15, 8:30 a.m. MST.

Now, a feature-length documentary by Sandia filmmaker Dan Curry brings that larger-than-life story to a wide audience. The 143-minute documentary, *Always/Never: The quest for safety, security, and survivability*, was itself something of an epic undertaking, involving on-camera interviews over the course of almost five years with dozens of key players in

(Continued on page 5)

SANDIA TITANS — Gathered at the National Museum of Nuclear Science & History in Albuquerque, New Mexico around two B28 gravity bombs recovered from the 1966 nuclear accident over Palomares, Spain, are Sandians (both active and retired), from left, Stan Spray, Leon Smith, Dan Summers, Ray Reynolds, Bill Stevens, and Bob Bradley. They are among the 42 individuals — including key policymakers, scientists, and engineers — who appear on camera in *Always/Never: The quest for safety, security, and reliability*. Looming overhead are USAF emblems of the "always" of nuclear weapon systems deployed during the Cold War. (Photo by Randy Montoya)

Sandia LabNews

Vol. 63, No. 1 January 14, 2011

Sandia National Laboratories

Managed by Lockheed Martin for the National Nuclear Security Administration

What Dr. King meant to me

As the nation pauses to observe Dr. Martin Luther King Jr. Day on January 17, Sandian Eunice Young reflects on what the slain civil rights leader meant to her and her family when she was growing up during the volatile era of the 1960s. Read Eunice's inspiring account on **page 12.**

Sandia international agreement to assist Mexican MEMS students

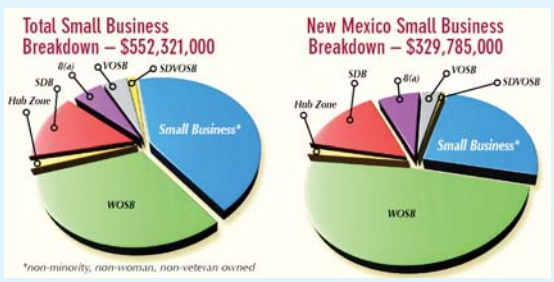
By Neal Singer

Sandia will help Mexican engineering students learn to design tiny microelectromechanical devices (MEMS), according to a memorandum of understanding recently signed by Sandia and the University of Guadalajara.

The rationale for the agreement is that the economic well-being of Mexico is a national security issue for the US, says Sandia project lead Ernest Garcia (2614). "If we

(Continued on page 4)

Impact! 2010



SANDIA'S IMPACT on the New Mexico economy is broad and deep, report shows. Story and charts on **page 8.**

Straight talk about pay freeze

SANDIA PRESIDENT AND LABS DIRECTOR PAUL HOMMERT, seen here during an all-employee meeting last week, tackled the DOE-announced pay freeze head on, explaining management's approach to the issue to an audience of almost 3,000 Sandians (attending the meeting in the Steve Schiff Auditorium and watching in real time via live videostream). For more about the two-year pay freeze, announced Dec. 17 by Energy Secretary Steven Chu, and Sandia's response to it, see the Change@Sandia website or watch the videostream of Paul's all-employee meeting at http://tiny.sandia.gov/ufuls4 (both available on Sandia's internal web only). (Photo by Randy Montoya)

Inside . . .

Mark Smith is 2011 president of ASM International . . . 2
Green Engineering Academy students visit CRF 3
2020 workplace will look very different 4
Colleagues remember Bernard Browne 9
The *Watercooler* marks 10 years online 9
Changes to security policies take risk-based approach . . . 11

From chunky to hunky

Four Sandians resolved a year ago to live healthier, more active, and fit lives. Read about their results in a story on **pages 6-7.**

That's that

Happy New Year and welcome back. Right before the break we got some frustrating news about the salary freeze, but the way I look at it is, "Hey, you didn't really need that $600 bucks anyway, did you?"

Seriously, though, there's no question some folks, notably some top performers, got a bum deal with the pay freeze, but after listening to Paul Hommert's discussion last week about the issue and the management response to it, I think he and his team are trying to make a bad situation as fair as possible. To borrow and paraphrase a comment from Donald Rumsfeld, they arrived at what may be "the best least worst" option: Stick with the already promised nonbase distribution (which some people may very well have already spent before the freeze was announced), and use a small pot of available funds to try to make good on at least some of the most egregious inequities created by the freeze. Was that the best option? Who knows? It was certainly arrived at in good faith and may very well be the best least worst decision. Glad I didn't have to make the call.

* * *

A few weeks back, when the whole body imaging, enhanced pat-down issue was burning up the electrons on the Web, I came across something that was pretty clever. You recall, I'm sure, that passengers at airports around the country were complaining about how disruptive and intrusive the new TSA procedures were. Most airport officials probably empathized a bit with the complaints but felt that at the end of the day all they could say was, "Sorry, but there's nothing we can do."

Officials at Milwaukee's Mitchell International Airport took a different approach. No, they didn't waive the new TSA requirements, but they had some fun with the situation. You know how anxious you get on the other, secure side of the scanners and the pat-downs, how you try to gather all your stuff up, get your belt and shoes back on, and whatnot? You can feel the pressure of that huge line pushing at you to hurry up and get out of the way. Well, at the Milwaukee airport, they established what they call a "Recombobulation Area." As in, "We know you've just been discombobulated; so relax, collect yourself, and get yourself back together in our recombobulation area."

All of this made me wonder, though: If you can be discombobulated and recombobulated, can you be just plain old combobulated? Can you be gruntled? Whelmed? Shevelled? Or kempt? And which is more dangerous: flammable or inflammable?

* * *

Speaking of the whole body imaging flap, we had a pretty lively discussion about the subject over at our *Lab News Interactive* poll on the internal web. Turns out that among the 750 or so who took the poll, 55 percent said if given the choice they'd opt for the body scan during their holiday travel. 11 percent would choose the enhanced pat-down over the scan (some citing radiation concerns), while 34 percent said they wouldn't fly at all, either out of principle or because they didn't have any travel plans. The comments generated by the poll question covered the waterfront, from "This is the worst assault on our freedom ever," to "Hey, it's no big deal." Several folks offered their own suggestions about how to deal with the potential terrorist threat at airports. Here was one rather unique idea: "Mostly in jest but . . . Suppose we invent a device that would detonate the explosives remotely. March all the passengers through a reinforced tunnel one at a time and let the would-be terrorists take themselves out. The thing doesn't even have to work as long as the perception is that it does."

* * *

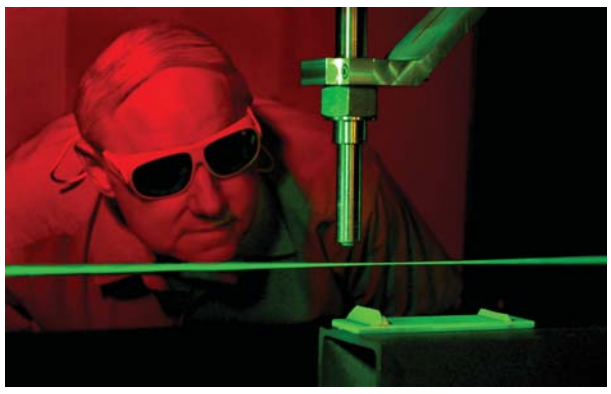
A couple of years ago, I ran an item about Abraham Lincoln delivering the Gettysburg Address as a PowerPoint presentation. It was a funny and pointed satire, with Lincoln doing shout-outs to local political hacks, stalling for time as an A/V guy tried to fix a technical glitch, and then reducing all of his inspirational words to a series of banal bullet points. The PowerPoint is still floating around out there on the web if you want to look it up. In the Web 2.0, social media era, though, PowerPoint is old hat. Inevitably, various wits out there are updating the Gettysburg Address for 2011: "4 scor n 7 yrs ago R 4fathrs brot 4th on this con10nt a nu nashn . . ." says one, along with a cartoon picture of Honest Abe leaning against a wall, stovepipe hat and all, and with a skateboard propped next to him, texting on his smart phone. Another variation offers the full speech — sort of: "4 score & 7 yrs ago: nu nation, all men =! No civil war. But! Not die in vain. Gr8 task b4 us: Gvt of-by4-ppl not perish frm earth!" Enuf sed.

CU nxt tym.

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

Mark Smith is 2011 president of ASM International

Mark Smith (1830), senior manager in Sandia's Materials Science and Engineering Center, is the 2011 president of ASM International, the materials professional society with more than 36,000 members in more than 100 countries.



IN THIS 2001 *LAB NEWS* PHOTO, Mark Smith uses a laser velocimeter system to measure the speed of tiny metal particles shooting toward the work surface during cold spray deposition. Mark is now president of ASM International. (Photo by Randy Montoya)

Mark joined ASM, then the American Society for Metals, 35 years ago while a doctoral student at Iowa State University.

Over the years, Mark has been active in many local, national, and international society positions. Career highlights include serving as a co-founder of the Thermal Spray Society (an affiliate society of ASM) as well as the International Thermal Spray Conference, and serving as the founding chairman of the editorial review committee of the *Journal of Thermal Spray Technology*, now the leading peer-reviewed technical journal in the field.

As ASM president, Mark also serves on the board of directors of the ASM Foundation, which is dedicated to fostering science, technology, engineering, and math (STEM) education.

Over the past 10 years, more than 6,000 high school students and more than 3,000 high school teachers have participated in ASM Materials Camps to foster interest in STEM. Results from a recent survey show that 84 percent of Materials Camp graduates subsequently enrolled in undergraduate science programs and more than 80 percent of the teacher graduates are using camp materials in their classrooms. In addition, 139 of the teacher graduates, including several here in Albuquerque, have gone on to establish formal materials science courses as an alternative to traditional chemistry, physics, and biology classes in their high schools.

Mark's father, professor John F. (Jack) Smith, is a retired professor of metallurgy and former department chair at Iowa State University, and remains active as editor of the *ASM Journal of Phase Equilibria and Diffusion*. Jack and Mark are among the few living father-son fellows of ASM.

Mark, who joined the Labs in 1981, is the second Sandian to serve as chief executive of the society, sharing that distinction with Al Romig, former executive VP, deputy Laboratories director, and chief operating officer for Sandia, who served as 1998 ASM president.

Amanda Wachtel wins SWE Collegiate Member award

Amanda Wachtel (6133) has been honored with the Society of Women Engineers 2010 Collegiate Member award. This national award recognizes significant contributions to the society and the engineering community; fewer than five of these awards are made each year. Amanda, an applied mathematician, joined Sandia in June under the Critical Skills Masters Program. She earned a bachelor of science degree in mathematics from the University of Alabama (UA) in 2010 and will be pursuing a master's degree starting in August 2011.

"The people I work with are amazing. They've been wonderful mentors and immediately made me feel like part of the Sandia community."

— Amanda Wachtel (6133)

Amanda was an active member of SWE's collegiate section at UA. During her freshman year, she was registration chair for the regional SWE conference hosted by the school. As a sophomore, she served as secretary of the section and subsequently served as membership vice president and then president of the organization.

During her years of leadership of the UA section, Amanda put into place a number of new or revised programs to provide a strong support network for female engineering students and to give them the professional tools they needed to succeed in a demanding field. She also organized and participated in a number of community service-oriented activities and actively worked to boost membership in the UA SWE section.

AMANDA WACHTEL

Amanda says that working at Sandia "has exceeded my highest expectation."

"The people I work with are amazing," she says. "They've been wonderful mentors and immediately made me feel like part of the Sandia community. The projects I've worked on have included both research and applied work, and it's incredibly exciting to come in everyday and work on projects that will directly impact the future of our nation. The opportunities at Sandia are vast, and I feel very fortunate to be working here."

Sandia LabNews

Sandia National Laboratories

http://www.sandia.gov/LabNews

Albuquerque, New Mexico 87185-0165
Livermore, California 94550-0969
Tonopah, Nevada • Nevada Test Site • Amarillo, Texas •
Carlsbad, New Mexico • Washington, D.C.

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

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

Contributors: Neal Singer (845-7078), Iris Aboytes (844-2282), Patti Koning (925-294-4911), Stephanie Holinka (284-9227), Karyn Scott (284-8432), Darrick Hurst (844-8009), Stephanie Hobby (844-0948), Heather Clark (844-3511), Tara Camacho-Lopez (284-8894), Renee Deger (284-8997), Michelle Fleming (Ads, Milepost photos, 844-4902), Jim Danneskiold, manager (844-0587)
Lab News fax **505/844-0645**
Classified ads **505/844-4902**

Published on alternate Fridays by Media Relations and Communications Dept. 3601, MS 0165

LOCKHEED MARTIN

Green Engineering Academy students visit Combustion Research Facility

By Patti Koning

As Kermit the Frog once lamented, it's not easy being green. Students in the inaugural class of Livermore High School's Green Engineering Academy are getting some help in living up to the connotations of that color — once synonymous with money, but now representing the environmental movement — through a partnership with Sandia. Last month, the Academy students and their teachers toured the Combustion Research Facility (CRF) and met the Sandia mentors who will guide their research.

"We are so lucky to have this great program right in our backyard with state-of-the-art technology so the students can see practical applications for the concepts they are learning in the classroom," says Sue Johnston, an Academy teacher.

Through Lockheed Martin's Gifts and Grants program, Sandia donated $10,000 to the Academy. Before he retired in December, Ray Ng organized the mentoring program that pairs 12 Sandians with the students and provides two math tutors and a presenter.

The 12 mentors are Ed Allen (8243-1), Larry Carrillo (8237), Lee Druxman (8231), David Franco (8112), Tricia Gharagozloo (8365), William Loo (8244), Jerry McNeish (8954), Mark Musculus (8362), Debbie Post (8248), Jack Skinner (8226), Elaine Yang (8226), and Derek Young (8229). Patty Hough (8954) and Jennifer Robles (8245) will provide math tutoring and Heather Jackson (8222) will give classroom presentations and hands-on lab demonstrations.

"This is really an incredible start to this program," says Mike Waltz, another Academy teacher. "It's really more than we had hoped for. The donation allows us to obtain all of the matching grant money available for this school year and the mentors give us a head start on meeting the mentor requirement next year."

Lawrence Livermore National Laboratory, Schneider Electric, and Chevron Corp. have also provided financial support to the program.

IN THE ALTERNATIVE FUELS LAB, Chuck Mueller shows LHS student Aaron Costello a window in the piston of a single-cylinder, heavy-duty diesel engine that has been modified to provide optical access to the combustion chamber. Academy teacher Mike Waltz looks on from across the lab. (Photo by Randy Wong)

GREEN ENGINEERING ACADEMY STUDENTS, from left, Laila Hassen, Areli Hernandez, and Laurena Landavazzo take a close look at the burner and optics table in the Turbulent Combustion Laboratory. (Photo by Randy Wong)

The Green Engineering Academy is a "school within a school" focused on green technology and engineering. The California Partnership Academy (CPA) grant program provided an implementation grant of $29,000 last year and $42,000 in the current school year. The funding comes with the condition that the local school district match the full amount and that the program obtain matching funds from industry partners. In the 2011/12 school year, the grant increases to $72,000 and then to $81,000 in 2012/13, making industry partners even more crucial.

The LHS Academy launched this year with 35 sophomores, half of whom are at-risk, another requirement of the program. Each year, 30 new students will enter the Academy in their sophomore year. "We started with a bigger class this year because we expected some attrition," says Johnston. "But everyone has stuck with the program and all the students are doing quite well."

The students take their core classes in science, English, social studies, and career technical education together with the same teachers from year to year. Those classes, even English and social studies, will have a science and engineering focus.

CPA requires that the students be matched with mentors in their junior year, usually from business partners. Waltz believes now that Sandia has stepped up with its support, other potential partners from the business community will come forward as well. "The first one is always the hardest and Ray really made this happen," he says. "Now that the ball is rolling I think we'll see a lot of momentum."

Andy McIlroy (8350) welcomed the students to the CRF and explained some research areas. "Our work in the energy field spans a wide area and has a lot of impact," he told the students. "The work that we do here in the CRF helped get you here today, quite literally."

In small groups, the students rotated through the Hydrogen Combustion Lab, hosted by Victor Salazar (8362); Flame Diagnostics and Chemistry Lab, hosted by Nils Hansen and Scott Skeen (both 8353); Turbulent Combustion Lab, hosted by Isaac Ekoto and Adam Ruggles (both 8367); Heavy Duty Diesel Lab, hosted by Mark Musculus; and the Alternative Fuels Engine Lab, hosted by Chuck Mueller (8362).

"The tour was pretty amazing," LHS student Ben Davidson says. "It's really interesting, all the cool stuff they do with alternative energy and hydrogen. I learned about the intricate ways that the researchers view what happens inside an internal combustion engine."

Waltz says that in addition to seeing interesting labs and equipment, the tour enabled the students to see what scientists really do day to day.

"I guess you'd call it career familiarization," he says. "They hear about different jobs in science and engineering, but it's much different to actually see where people work and the equipment they use. We also started building that relationship between the students and the mentors."

Sandia CaliforniaNews

The mentors will provide guidance and support to the students as they work on their projects for the Tri Valley Science and Engineering Fair in the spring. LHS student Emily Perry is considering a dance pad that generates electricity for her project. The idea, says Waltz, is to work up to the capstone research project that the students must complete in their senior year.

The 12 mentors from Sandia have 40 hours of paid time to spend with the Academy students. Elaine Yang says she volunteered to be a mentor because she sees it as a way to give back. "Mentors have made such a big difference in my life and career," she explains. "That one-on-one interaction is really helpful."

Derek Young was involved in science fairs and programs like the Science Bowl when he was in high school, so he's interested in seeing things from the other side. He admits to another ulterior motive. "I have an eight-month-old baby, so I thought I'd get a head start on what to expect in the teenage years," he says.

MARK MUSCULUS shows students Areli Hernandez, Laila Hassen, Laurena Landavazzo, and Chris Ingwerson a frame of a high-speed movie of combustion luminosity taken through the transparent piston of an optical diesel engine. (Photo by Randy Wong)

MEMS agreement

(Continued from page 1)

could help Mexico improve its research and development capabilities, it would help stabilize its economy," he says.

"Ultimately, the US may be the biggest beneficiary if the MOU contributes to the vitality of the Mexican economy and thereby the stability of the US-Mexican border," says Gil Herrera, director of Sandia's Microsystems Science, Technology, and Components Center 1700. "We believe that Sandia will also benefit from the relationship, as we will have new minds challenging the design envelope of our SUMMiT MEMS technology." Gil is in overall charge of Sandia's activities in support of the collaboration.

"If we could help Mexico improve its research and development capabilities, it would help stabilize its economy."
— Ernie Garcia

Sandia's SUMMiT V program, one of the most advanced in the world, will be available to help students design MEMS devices in five layers of silicon. Each layer adds another level of complexity to the design. MEMS devices currently control light, electricity, or fluid flow in today's video cameras, printers, recording devices, and televisions. They also react to motion shock by opening air bags in cars.

"The University of Guadalajara is like the state of California's higher education system," Ernie says. "It supports a number of universities throughout the Mexican state of Jalisco. Its leadership wants to use SUMMiT as the basis for a future graduate program in MEMS."

The Mexican interior

"MEMS manufacturing will leverage many of Mexico's traditional strengths in electronic manufacturing," says Gil. "Sandia is in a position to help the University of Guadalajara System migrate to a state-of-the-art MEMS design capability."

Steve Rottler, Sandia's VP for basic technologies (S&T & Research Foundations Div. 1000) who signed the agreement for Sandia, says, "We were very impressed by the commitment and enthusiasm of the University of Guadalajara faculty and leadership. We are excited about the opportunity to collaborate in the continued advancement of technologies that are vital to the economies of both countries, and to the prospect that this collaboration can contribute to improved security for both countries."

STUDENTS IN THE CLEAN ROOM at the Universidad Autónoma de Ciudad Juárez in its Centro de Investigación en Ciencia y Tecnología Aplicada are ready for serious work. Professor Jose Mireles, head of this research center, has worked with Sandia for some time. Sandia's MOU with the University of Guadalajara will open MEMS education opportunities to more Mexican students.

IT'S A SMALL WORLD — 10 Mexican professors (shown here) visited Sandia in December 2009 to participate in the Labs' SUMMiT design course for tiny MEMS devices. With the professors are Sandians Vic Yarberry (1749, fourth from left), Jeff Lanz (1749, eighth from left), and Ernie Garcia (2614, second from right). The course is offered by MEMS Technologies Dept. 1749 and coordinated by Stephanie Johnson. The MOU with the University of Guadalajara will open new opportunities for Mexican students to learn MEMS technologies.

Similar efforts by Sandia are also underway at Mexican universities in Juarez, Vera Cruz, and Mexico City, as well as the Puebla-based national research institute INAOE (National Institute of Astrophysics, Optics, and Electronics).

The agreement extends earlier work by Sandia, which played a role in creating a Bi-National Sustainability Laboratory on the border of the United States and Mexico. That effort was intended to examine issues of interest on both sides of the border, like water rights. Research efforts were expected ultimately to create industries and jobs at the border to staunch the one-way flow of workers from Mexico to the United States. That effort is now directed by an independent nonprofit corporation with a variety of sponsors.

The Guadalajara agreement is different, says Ernie, because it (and other Sandia university efforts) are in the interior of Mexico rather than its outskirts.

"We hope eventually to have Mexican universities compete in Sandia's University Alliance annual MEMS competition for the most imaginative or practical designs," Ernie says. Student contest winners get to see their designs become reality through fabrication at Sandia's MEMS fabrication facilities.

Not a sprint but a marathon

But to reach that goal for Mexican students, he says, will require patience. "It's not a sprint, it's a marathon," Ernie says, mentioning potential barriers like US controls on exporting technology and intellectual property to foreign countries.

A delegation of Mexican professors from Guadalajara will visit Albuquerque next spring to confer with researchers at Sandia and possibly the University of New Mexico. The trips will be funded by the state of Jalisco's technology office. (Albuquerque and Guadalajara are designated so-called "sister cities.")

The Guadalajara program is expected to expand an already-existing Sandia-led national MEMS project for Mexico, funded by that country with $2 million. "Last December, a number of Mexican professors took our MEMS course, licensed our design software, and purchased 100 silicon chips with their MEMS designs," Ernie says.

Not in Kansas anymore: Workplace 2020 sure looks different

By Karyn Scott

Workplaces in the year 2020 will look very different than they do today. Everything we know about work — where we work, how we work, what skills we need to stay employable, what technologies we use to connect with colleagues — is changing. The workplace of tomorrow is being shaped today, driven primarily by globalization, the shifting demographics of the workplace, and the social web.

Those are among the key points made by Karie Willyerd, founding partner of Future Workplace and former chief learning officer of Sun Microsystems, in a recent presentation sponsored by the Sandia Learning and Professional Development Organization 3520.

Willyerd noted that the majority of the largest companies in the world are no longer headquartered in the US. With their tremendous economic growth, China, Brazil, Russia, and India drawing away talent from the US and driving the increased use of virtual teams.

The demographics of the workplace are also shifting dramatically. For the past 30 years, baby boomers, those born between 1946 and 1964, have dominated the workplace. As the largest demographic in organizations, baby boomers have set the mores for defining work and how it gets done. However, as these baby boomers retire, they are being replaced largely by millenials, those born between 1976 and 1997. By the year 2020, millenials will make up more than half the workforce and will hold that dominant position for at least two decades.

KATIE WILLYERD, an expert on the future of the American workplace, says the era of baby boomer dominance of the workplace is nearing its end. So-called millenials, she says, will bring a different value proposition to the table.

The culture of organizations will inevitably change, Willyerd said, as millenials become the major demographic in the workforce. Millenials tend to see themselves as free agents, rather than buying into the idea of working at a company for 50 years and receiving a gold watch upon retirement. As free agents, Willyerd said, millenials have a drive for rapid promotion and strive to get ahead by improving their skill set. Millenials are a mobile segment of the workforce and will, Willyerd noted, "vote with their feet."

Additionally, for the first time in history, employees entering the workplace are using technologies far ahead of those adopted by their employers. Millenials are bringing social media into the workplace, Willyerd said, resulting in the ubiquity and democratization of information. Millenials tend to get frustrated with the defined hierarchy of the workplace, and instead, want to go directly to the person who has the best information.

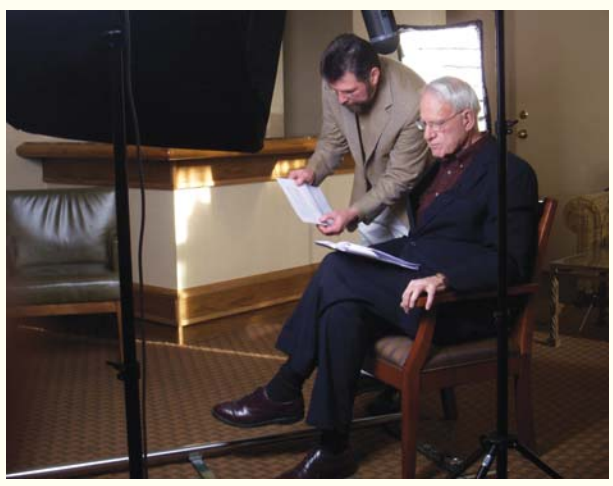
These major shifts in the workplace have implications for companies and employees alike, Willyerd said. Organizations must develop innovative ways of attracting, retaining, and motivating employees; and employees need to cultivate a global and collaborative mindset and get super-connected digitally.

Willyerd's entire presentation is available through Video Services' streaming library at http://tiny.sandia.gov/qgikm.

Always/ Never

A 3-D ANIMATION developed by Brent Peterson depicts a 1968 incident involving a US Air Force B-52 near Thule Air Base in Greenland.

(Continued from page 1)



ALWAYS/NEVER DIRECTOR Dan Curry goes over script elements with James Schlesinger, former secretary of both Defense and Energy.

the nation's nuclear policy arena.

"It's fantastic," says Div. 1000 VP Steve Rottler of the movie. Steve sponsored the production and championed it from the outset. "It's well beyond what I envisioned when we started the project five years ago."

When the idea for the project first came up, the focus was strictly Sandia-centric: "Our intent at the outset," Dan says, "was to capture a slice of Sandia's early institutional legacy and highlight unique systems and component engineering accomplishments in the areas of nuclear weapon use control, detonation safety, and reentry systems survivability."

It soon became clear to both Dan and Steve that the story, to be told properly, would have to be bigger than that.

"During the early discussions with Steve," Dan recalls, "we decided to place Sandia's stories alongside achievements by Los Alamos and Livermore [national laboratories], and additionally, those achievements had to be placed in the context of a much larger historical framework, one shaped by NATO and US policy and military operations, international politics, and world events."

In telling the *Always/Never* story, Dan decided to rely heavily on first-person narratives, an approach he had used successfully in *US Strategic Nuclear Policy: An Oral History*, a documentary he produced for Labs directors Tom Hunter and Paul Robinson in 2005.

A closely held history

The result of Dan's efforts is a nuclear weapon history that spans the years 1945-1991 and examines high-level geopolitical events of the Cold War and the internal, fascinating, and closely held history of nuclear weapon design and engineering driven by these events.

SURVIVORS OF THE ATTACK on Hiroshima in World War II walk past scenes of atomic devastation. (Library of Congress)

PRESIDENT JOHN KENNEDY greets Soviet Premier Nikita Khrushchev at the White House during the height of the Cold War. As *Always/Never* makes clear, Kennedy was instrumental in insisting on more rigorous use controls on nuclear weapons. *(Library of Congress)*

Bill Stevens, Bob Bradley, Ray Reynolds, Leon Smith, Stan Spray, and Dan Summers (pictured on page 1) are among 16 active and retired Sandia designers and engineers who share their stories for the camera.

Speaking of the early 1950s, Bill Stevens recalls, "Nuclear weapons in those days were the product of a demonstration of a brand new capability by Los Alamos and the adoption by the military planners. . . . In those days Sandia Base was a very interesting place; each military service didn't want to be left out of the nuclear weapons [program], so they had a cadre living on the base, working with the people at the Labs."

Bob Bradley adds, "This was a period of time when there was a technical push. . . . We understood the technology; we also understood the limits of the technology, so Sandia was proactive."

About the early development of the B61, Ray Reynolds recalls, "The design architecture of the system was such that . . . it allowed for a continuing set of improvements for achieving improved safety, particularly, as well as improved use control. . . ."

Leon Smith adds, "One of the things that helped us to achieve a high degree of integration was the fact that we had advanced components under development that we could bring together. We had very strong groups in aerodynamics, in nuclear weapons effects. . . ."

On nuclear detonation safety, Stan Spray says, "One thing to think about is [that] safety really means availability. If you have a safe weapon you can deploy it anywhere in the world and not put the public at risk."

Dan Summers sums up the state of modern nuclear safety in the mid-1970s: "There were units out there that had no modern safety associated with them. It became more and more apparent after Stan's briefing [Stan Spray's seminal 'Burned Board' briefing] and people began to really pay attention, [began to appreciate] that we needed to review our entire stockpile and put forth a level of national effort to understand what our level of safety should be."

STEVE ROTTLER, champion and sponsor of the *Always/Never* documentary, being interviewed for the film. Director Dan Curry is in background.

DR. STRANGELOVE, the landmark 1964 film starring Sterling Hayden (seen here), captured the Cold War era preoccupation with nuclear weapons and raised troubling questions about use control issues. (Photo used by permission of Columbia Pictures)

Among the 42 individuals Dan interviewed for the documentary were former secretaries of defense James Schlesinger and Robert McNamara, former Los Alamos and Lawrence Livermore lab directors Harold Agnew and Johnny Foster, former commander in chief of the US Strategic Air Command Gen. Larry Welch, and former directors of Navy Strategic Systems Programs Adm. Robert Wertheim and Adm. Pete Nanos.

Collectively, they recount the history and tell stories about many of the key technological solutions to the challenges of nuclear weapon command and control, weapon safety in severe abnormal environments, and some of the technologies that have ensured the survivability of nuclear weapons through active defenses. These are stories that have not been told before in this detail.

In his Nov. 29 briefing about the documentary to Sandia's Laboratory Leadership Team, Steve Rottler wrote, "I believe that exploring key aspects of the historical interaction between technology, military operations, and national policymaking may provide a better understanding of what it will take to sustain the nation's principal deterrent force in an uncertain future."

Always/Never *core creative team*

The core Sandia Video Services Department team of Dan Curry, Brent Peterson, and Mark Olona (with additional support from independent videographers Dale Kruzic and Dwight Irwin and video engineers Mike Wood and Chad Everett) began production of "Always/Never" in August 2006 with the interview of Bill Stevens at his home in Taos, N.M. The majority of interviews were taped on location across the country in high-definition video to best future-proof the volumes of valuable oral history being recorded. With an eye to very high production value, the interviewing was completed in June 2007.

Dan began combing through the hundreds of hours of footage to begin scripting and editing. At the same time, Brent began the work to create a total of 56 minutes of 3D animation and visual effects used throughout to help illustrate the narrative.

During animation and editing, Dan conducted multiple trips to the National Archives in Washington, D.C., to cull from hundreds of hours of rare archival film and thousands of photographs and fill out the visual texture of the film. By late 2008, all the elements were in place to begin development of a complete original music score and a sound design in 5.1 surround-sound by Santa Fe composer Jeff Nelson.

BRENT PETERSON develops 3-D animations used to illustrate key historical moments in *Always/Never.* Here, Brent works on an animation of the 1961 Goldsboro incident.

Finally in 2010, after a multiyear marathon, Mark and Brent produced a DVD complete with unique navigation and extra features for the 143-minute film.

The cHunky Monkeys are transformed, empowered, and energized

HUNKY MONKEYS — Walking used to be strenuous, now running is just working out with a smile. (Photo by Randy Montoya)

POWER HOLD — Paul Keller, Phil Sandoval, Gary Moses, and Tom Rogers, aka The Hunky Monkeys, lift the 181 pounds they lost collectively. (Photo by Randy Montoya)

"The big thing to remember is that our bodies need a lot less food than our minds do. Your body needs about 1,500 to 2,000 calories a day, but your mind wants 3,000 to 4,000. Once you get your mind under control, your body will take care of itself."

Gary Moses (4242),
when talking about his recent weight loss

By Iris Aboytes

Gary Moses and co-workers Phil Sandoval, Tom Rodgers, and team captain Paul Keller, all from Org. 4242, make up the Chunky Monkeys, one of Health, Benefits, and Employee Services' (HBE) 2010 Biggest Loser Club teams. In the May 7, 2010, issue of the *Lab News* they talked about their quest in going from chunky to hunky. If you know or have seen any one of them, you know the transformation has taken place.

Coming back to work after the holiday break, talk of New Year's resolutions fills Sandia hallways. The general consensus seems to be that healthy eating and exercise hold the key to a healthier and more energized lifestyle. In an effort to help all of us be healthier, the Chunky Monkeys have agreed to tell us how they accomplished their transformation.

"First of all, it is not a diet," Phil says. "It is a lifestyle change."

Phil lost 66 pounds in six months, the duration of the program. His high blood pressure and cholesterol are now normal. "When the weight started coming off, I noticed I had a lot more energy. Portion control became my friend, and exercise made me a believer."

Phil is a baseball and football coach. "It was great," he says. "I would tell the 10-year-olds on my teams that if they could beat me, they did not have to practice. They never did. The best part was that I wasn't winded."

When they began the program, the Chunky Monkeys would all walk every day at lunch. Phil had never been a runner, now he runs three to four miles or does other types of cardio on Monday, Wednesday, and Friday. On Tuesday, Wednesday, and Saturday, he does circuit weight training.

"My motivator for the Biggest Loser contest was the fact that I did not want to let my team down," Phil says. "Besides, I am as competitive as any Sandian, and I wanted our team to win. My big-salad lunches have become habit, and my protein and vegetable dinners leave me well-satisfied, no second servings for me. Fresh fruit has become my snack of choice."

Gary says, "My body feels younger and stronger. I had noticed that I was getting heavier and I began taking heartburn medication."

Gary now wears shirts that are an inch smaller around the neck. Becoming one of the Chunky Monkeys made the difference. "No heartburn medication for me and my blood pressure is way low," Gary adds.

"I used to do a lot of mindless eating. I would be cleaning up the dishes and if there was food on my children's plate, many times without even thinking I would pop it into my mouth. Now I fill my time with other things, not eating."

Gary works out three times a week. Jenny Perea from HBE designs different exercise programs for him and changes them so he won't get bored.

Gary tried losing weight before, but this time he was part of a team. He had a built-in support group, plus he had the help of HBE professionals. He has yogurt, granola, and fruit for breakfast.

"I love blueberries," he says. "They are a treat for me. I guess it worked for me because I wanted to do it. Each person has to do what works for them. HBE professionals can help you."

Tom agrees that being part of the team has made a big difference for him. "I hadn't actually thought about losing weight," he says. "I just bought bigger clothes. Then I was invited to join the Chunky Monkeys. When I attended the Biggest Loser orientation, HBE professionals stressed committing to the program or not bother trying. That's when I decided to commit to losing weight.

"Being part of the team helped me stay on track, primarily because I did not want to let the team down. My meals remained the same, but I added more vegetables, cut back on the meat and starches, and decreased my meal size. Basically, it boils down to making better food choices and portion control. When you marry this to exercise, you begin to see results."

Tom's exercise regime consisted of working out with Tony Horton (Power90/P90X), or Shaun T. (Insanity), both home fitness gurus.

"I would get up and go right for the DVD player and push play," Tom says. "The workouts reminded me of how out of shape I really was, which motivated me to do better. Once that got easier, HBE helped me find another form of personal self-punishment — not really punishment; I actually enjoy my workouts and feel bad when I miss them.

"I did not lose weight each week. There was a six-week period where I didn't lose any weight at all, primarily because I was replacing fat with muscle. Additionally, I felt better and my blood screening kept getting better. These positive results and support from the team were my biggest motivators. I did not want to let the team down."

Some medical issues were a wake-up call for Paul that it was time for some changes. "Just before winter break in 2009 I had a significant eye infection that required me to visit the doctor almost every day for two weeks," says Paul. "My blood pressure was checked and I was weighed at each appointment. My blood pressure numbers were not good, and my weight, well… In addition to the ophthalmologist providing graphic details about my eye infection, I also had to endure his lectures on how my blood pressure and weight were not conducive to my overall well-being.

"I decided to change my lifestyle and began in January 2010," adds Paul. "I went on the South Beach diet and I began working out. By the end of January, I had lost 18 pounds. When my officemates approached me to become one of the Chunky Monkeys, I was not enthused at first. I was on a program that was working and, by golly, I knew everything about everything. While I was on travel, the Chunky Monkeys were formed, and I was elected team captain."

The Chunky Monkeys joined the Biggest Loser program and took classes relating to nutrition and the physiology of exercise. "It did not take long for me to be humbled and see that although I was having some success doing things my way, there were specific things I was doing that would not be sustainable," Paul says. "It is amazing how you can learn from professionals who have been trained for years. It was not easy letting go of my outdated philosophies."

Weight management is just one aspect of the overall fitness that the Biggest Loser program highlights. In March the Chunky Monkeys had their first blood draw to have cholesterol, glucose, and other indicators checked. "I was pre-diabetic, with a resting heart rate of 71 to start, and none of the other numbers were good either," says Paul. "By August everything was in the normal range and my resting heart rate was 51."

Paul's routine is the same as it was when he started his change. He works out at the gym five to six days a week. He mixes his cardio workouts and weightlifting routine, focusing on the major muscle groups.

"Amy Cincotta from HBE, told me, 'You can build muscle anywhere, but when you focus on building muscle in the large muscle areas, those large muscle groups will burn more energy,'" Paul says.

"Even though the competition is over, we are not done," Tom says. "The bottom of the chart [at right] shows our new goals. Now we're the Hunky Monkeys, and we encourage you to join us in our fitness endeavor. Sandia's HBE professionals are there to help you through the entire process, but only you can make the decision to start. Once you start, you will need to commit to the program. Only then will you succeed. Sure it takes discipline and it is not easy, but that doesn't mean it can't be fun. Get started by making an appointment at HBE, commit to the program, and you will see the results.

Regardless of your path forward, we want you to know that the Chunky Monkeys are here to support you as you supported us."

"Just remember," chimes in Phil, "a healthy lifestyle empowers and energizes you. It did us."

Before & After

Two Chunky Monkeys are transformed before our eyes. The Nov. 2009 photo on the left shows Phil on the left and Paul on the right. The Nov. 2010 photo on the right shows Phil and Paul in the same positions after their weight loss. Notice the attitude in both their faces.

By Amy Cincotta,
exercise physiologist (3334)

I met the Chunky Monkeys in February 2010 at HBE's Biggest Loser Club initial weigh-ins, measurements, exercise, and food intake planning. I was excited to have a team of four men. Statistically, men have a better chance than women of losing more weight due to physiological differences.

The team had a strong commitment and fun relationship with each other. There was ridicule, joking, and very strong camaraderie. We laughed as we worked. I told my co-worker and dietician Betzi Hitz (3334) this team could win. Win they did. Not the contest, but they lost the most fat and gained the most lean (calorie-scorching muscle) tissue.

The team used home exercise DVDs such as P90X and Insanity. They walked every day at lunch, joined gyms, and started resistance training. Months later, they still weigh in regularly and are planning a team comprehensive body composition analysis next month.

Even more amazing is the fact that Paul quit smoking mid-program. Tom made weekly progress charts and spreadsheets that helped to keep everything straight and everyone accountable. Gary is at the scale every Thursday, and Phil, who initially thought he would not fare as well, went on to lose the highest percentage of body weight, more than 25 percent. Their success and energy was so contagious it enhanced everyone's self-esteem. Their lively personalities draw others in. These are truly Hunky Monkeys.

Weigh-ins for the 2011 Biggest Loser Club begin on March 1 and continue through March 18.

CHUNKY MONKEYS

	Phil	Gary	Tom	Paul		CHUNKY MONKEYS Going from Chunky to Hunky Team Total
Weight						
Goal	195	200	205	210		810
Initial (2/4/2010)	258	260	238	247		1003
Final (8/18/2010)	192	212	203	215		822
Difference	66	48	35	32		181
BMI						
Initial (2/4/2010)	40.4	35.4	32.4	31.8		140
Final (8/18/2010)	30.1	30.4	27.7	27.7		115.9
Difference from Initial	10.3	5	4.7	4.1		24.1
Ab Circumference						
Initial (2/4/2010)	50	50.75	44	44.25		189
Final (8/18/2010)	38.5	39.25	36	39.5		153.25
Difference from Initial	11.5	11.5	8	4.75		35.75
Arm Circumference						
Initial (2/4/2010)	15.5	14.5	14.5	15		59.5
Final (8/18/2010)	13.5	13.5	13.75	14.25		55
Difference from Initial	2	1	0.75	0.75		4.5
Gluteal Circumference						
Initial (2/4/2010)	26	26.5	25	25.5		103
Final (8/18/2010)	23.5	24	23	24		94.5
Difference from Initial	2.5	2.5	2	1.5		8.5
Hip Circumference						
Initial (2/4/2010)	48	47.5	43	46		184.5
Final (8/18/2010)	40.5	42.5	39.5	42		164.5
Difference from Initial	7.5	5	3.5	4		20
Chest Circumference						
Initial (2/4/2010)	49.5	49.5	47	44		190
Final (8/18/2010)	42	43.25	44	42.75		172
Difference from Initial	7.5	6.25	3	1.25		18
The Cool Stuff						
Total Inches Lost	41.3	31.25	21.95	16.35		110.85
Percent of Wt. Lost	25.58%	18.46%	14.71%	12.96%		18.05%
Orman Body Comp (OBC)	22%	24.6%	17.9%	17.6%		

GOALS FOR JAN 2011

Phil	Continue current exercise plan/diet. OBC of 17% or less. BMI below 29
Gary	OBC = 20%, BMI <30, Weight =180
Tom	OBC = 15%, Maintain current exercise plan/diet & add weight training 3 x wk.
Paul	Continue current exercise plan/diet. Weights 3x wk & hard cardio 3x wk.

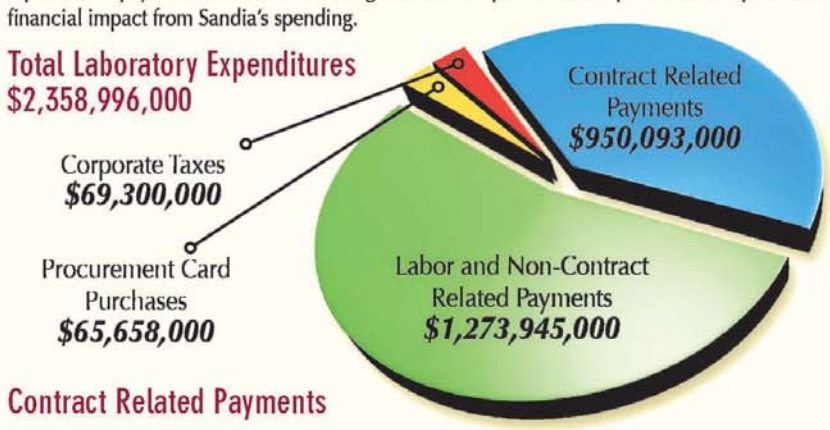
Impact! 2010

2010 Sandia Economic Impact on New Mexico

2010 data is based on Sandia's fiscal year beginning 10/01/09 and ending 9/30/10. While Sandia spends a large portion of its funding within the state, its economic footprint is thought to be much larger than the actual dollars it spends. Economic impact models have suggested that the effect Sandia has on New Mexico's economy is approximately three times the total amount Sandia spends on purchases and salaries.

The data represented in this brochure has been derived from Sandia's corporate financial system as it pertains to payments made. The following charts and explanations are provided to expand on the financial impact from Sandia's spending.

Total Laboratory Expenditures $2,358,996,000



Contract Related Payments

- FY 2010 Contract Related Payments represent dollars paid to purchase goods and services.
- FY 2010 Total Contract Related Payments – of the $950,093,000 in contract related payments, 58% or $552,321,000 was paid to Small Business.
- FY 2010 Total Contract Related Payments – of the $950,093,000 in contract related payments, 53% or $499,385,000 was paid to New Mexico businesses.
- Of the FY 2010 Total Contract Related Payments in New Mexico, 66% or $329,785,000 was paid to small businesses.

Employment

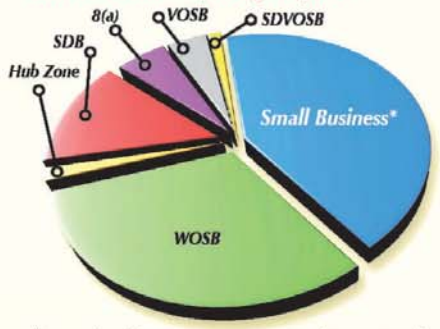
- Sandia employs approximately 9,298 regular and temporary employees of which 8,226 work at Sandia's New Mexico site. In addition, Sandia employs approximately 1,335 Staff Augmentation employees.
- Sandia maintains a diverse workforce. At the New Mexico site, our workforce is comprised of 68% men, 32% women, and 30% minorities.
- In FY2010, out of 726 new hires, 203 graduated from a New Mexico university. Currently there are 338 students participating in year-round internships.

Contract Related Payments

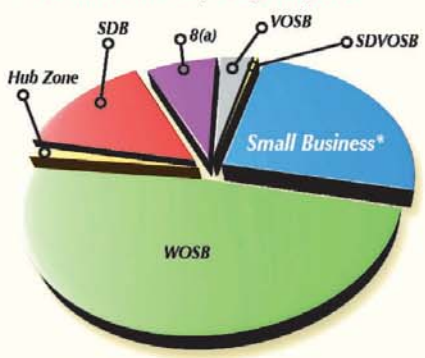
	Total	New Mexico
Small Business	$552,321,000	$329,785,000
Other than Small Business	$397,772,000	$169,600,000
Total	**$950,093,000**	**$499,385,000**
Woman Owned Small Business (WOSB)	$151,926,000	$130,098,000
HUB Zone Small Business	$8,542,000	$3,758,000
Small Disadvantaged Business (SDB)	$66,676,000	$37,519,000
8(a)	$25,925,000	$19,523,000
Veteran Owned Small Business (VOSB)	$20,977,000	$9,046,000
Service Disabled Veteran Owned Small Business (SDVOSB)	$5,840,000	$951,000

New Mexico Total Contract Payments	**$499,385,000**
As a Percent of Total Contract Payments	53%
New Mexico Total Small Business Payments	$329,785,000
As a Percent of Total New Mexico Contract Payments	66%
Total P-Card	$65,658,000
New Mexico P-Card	$11,764,000
As a Percent of Total P-Card	18%

Total Small Business Breakdown – $552,321,000



New Mexico Small Business Breakdown – $329,785,000



*non-minority, non-woman, non-veteran owned

Procurement Cards

FY 2010 Procurement Card purchases – of the $65,658,000 in procurement card purchases, 18% or $11,764,000 was spent in New Mexico.

Sandia's effect on New Mexico's economy, community highlighted in 2010 economic impact report

By Heather Clark

Sandia bought more than $500 million worth of goods and services in fiscal year 2010 from New Mexico companies, 40 percent more than in the previous fiscal year, according to a new report from Small Business Utilization Dept. 10222.

The purchases are part of the more than $1 billion spent overall on procurement of goods and services, the *2010 Sandia National Laboratories Economic Impact on the State of New Mexico* report shows. The report — released this week at the Sandia- sponsored 2010 Economic Impact Summit — shows the important role Sandia plays in the state and local economy and the community.

"Sandia National Laboratories has a long and distinguished record of encouraging and partnering with highly qualified, diverse small business suppliers who assist us in achieving our national security mission. We are fully committed to continuing this track record," Labs Director Paul Hommert says.

Outreach efforts make a difference

The increase in money flowing into New Mexico's economy is due to Sandia's outreach efforts — meeting with business organizations, chambers of commerce, and business owners, holding town halls, and hosting a Supplier Engagement Summit where suppliers discussed their needs in working with the Labs, says Don Devoti, manager of the Small Business Utilization Department.

"We're being more transparent in our operations and by letting these companies know we really want their business. I think that exposure and our efforts to open up Sandia and our procurement process to the local community has paid off," Don says.

Here are some of the numbers showing Sandia's overall impact:

- $1.3 billion was spent on labor and non-contract-related payments.
- $950 million was paid for contract-related payments.
- $68 million was sent to the state of New Mexico for corporate taxes.
- $66 million was spent through procurement card purchases, in which Sandia employees use cards similar to credit cards for low-priced commercial goods and services necessary to conduct business.

Sam Felix, senior manager of Supply Chain Integration Dept. 10220, says the report also shows Sandia employs 9,300 people — about 8,200 of them in Albuquerque.

Economic models estimate Sandia's purchases and salaries have a total impact on the local economy of almost $7 billion, or three times greater than the amount spent, the report says.

"When our community is dealing with tough economic times, we hope that Sandia's jobs, the Labs' partnership with businesses, and its volunteerism and charitable donations to local programs will help the Albuquerque area weather the storm and emerge even stronger when the economy improves," Sam says.

Saving taxpayers $64 million

Buyers with Sandia's Supply Chain Management Center saved taxpayers about $64 million through cost savings on purchase orders, using negotiated savings, such as volume discounts, Sam says.

The report also shows Sandia's long-standing commitment to small businesses. Sandia's small business advocates encourage buyers to give qualified small businesses opportunities to sell their products and services to Sandia. Nationwide, the Labs spent $552 million at small businesses. Almost $330 million, or 60 percent, of that was spent at small companies in New Mexico.

The Small Business Act mandates that federal contractors utilize small businesses, including those that are small disadvantaged businesses, small businesses owned by women, veterans and service-disabled veterans, and small businesses located in impoverished areas called Historically Underutilized Business (HUB) zone businesses. Overseeing this mandate is Sandia's Small Business Utilization Department, which annually negotiates small business subcontracting goals with NNSA.

Sandia also helps the state's economy through participation in the New Mexico Small Business Assistance (NMSBA) Program. The Sandia NMSBA Program has created and retained 1,549 jobs, decreased operating costs by $45.7 million, increased revenues by more than $82.4 million, and invested more than $17.4 million in expansion efforts and purchases of local goods and services since its inception, according to the report.

And, the Sandia Science & Technology Park, a 250-acre master-planned research park adjacent to the Laboratories, employs more than 2,000 people at an average wage of $71,612.

Sandia employees contributed more than $4.2 million to the United Way of Central New Mexico in 2010. They also logged in more than 100,000 volunteer hours in 2009. And, they donate on average 2,000 books, 23,000 school supplies, 63,000 pounds of food, 435 holiday gifts, and 500 pairs of new shoes to the community each year, the report says.

Employee death

With a twinkle of intelligence in his eye, Bernard Browne was quick to smile and slow to speak

By Iris Aboytes

Bernard Browne (2915) died on Dec. 31. He was 50 years old and had been at Sandia eight years. Bernard joined the Tonopah Test Range team in 2002 after his retirement from the US Air Force.

"His positive attitude, professionalism, technical capabilities, and pleasant personality earned him the immediate respect and admiration of our team and management in New Mexico," says his manager, Robert Sherwood (2915). "He was selected lead and owner of the Telemetry Lab, a section that is critically important to the success of our flight test activities. His performance led me to select him as our radar lead, where he led the efforts of two other technologists.

"His consistently high performance culminated in his advancement to the Distinguished Technologist level in less than eight years of service with Sandia. His quiet character masked a deep-thinking, fun-loving personality that enjoyed an occasional prank. When our former manager Vern Gabbard retired, Bernard and some of his coworkers presented him with a bobble head replica of our senior manager, an individual Vern sparred with frequently. It was the hit of the party."

BERNARD BROWNE and his wife, SARAH

Bobby Weaver (2915) was Bernard's project leader. "I came to know him well as a very competent worker and as a friend," Bobby says. "There are only about 20 Sandia employees here at Tonopah, and we work long hours together, 13- to 14-hour days. We also spend about eight hours each week riding in vans to and from Las Vegas to Tonopah. Conditions here are very isolated and somewhat primitive. We are away from our homes and families for three days each week. Bernard's pleasant personality and demeanor made working at the test range much more bearable for everyone and often even fun."

Steve Ohrt (2915) says that Bernard took his work very seriously and was very meticulous.

"He represented Sandia's principles admirably in his interactions with coworkers and customers," Steve says. "Bernard was a true professional and a very hard worker. His expertise and calm approach will be missed by this organization."

Joe Miller (2915) worked with Bernard for six years. "He never had a negative thing to say about people, recalls Joe. "Maybe it was because he was a retired Air Force master sergeant, or because he grew up on the tough west side of Chicago and knew not to sweat the small stuff.

"Bernard had the gift of the pen," adds Joe. "He could make his PMF look like he invented the light bulb and yet be true to his craft, his cohorts, his management, and Sandia. Bernard was as honest as the day is long. When he pulled up into the parking lot at work with his perfectly polished, unblemished BMW, you just knew it was going to be a good day."

Adds Mike Stearman (2915), "Bernard did enjoy his BMW, and on one occasion let it slip that he had spent eight hours polishing his car over the weekend. His BMW always looked as if he had spent the previous eight hours polishing it.

"Bernard was very thorough. He was always checking his equipment to make sure it was working properly. He was a stickler for attention to details, not only with the equipment, but his paperwork and checklists. When confronted with a difficult problem, he would research it in depth before beginning work to solve it. Bernard grew up in Chicago and was a Chicago Bears fan. He was quiet, unassuming, and respected by his co-workers."

Richard Crowder (2915) says Bernard was an invaluable asset to Sandia and the Tonopah Test Range. "He was always in a great mood and had a positive attitude," says Richard. "He was a true family man who loved his wife and kids."

"He was always very polite and courteous," says Mike Ollis of Bernard. " He was willing to share any information that he felt would help."

His co-worker James Galli (2915) says Bernard was tall, slender, quiet, and very classy. "He had a twinkle of intelligence in his eyes. He was quick to smile and slow to speak. He was patient, patient, patient. Think of Jimmy Stewart, and you'll be very close. I have never met anyone who didn't like Bernard Browne."

"Bernard has been fighting a long battle," adds Robert. "He was missed every day he was not at the range. Knowing he will not return leaves a significant void in our team and spirit."

The *Watercooler*: 10 years and counting

By Bill Murphy

The *Watercooler* is up. And it has been for more than 10 years now. When a television program lasts for a decade — think *ER* or *CSI* — it's considered a very substantial hit. By that measure, the *Watercooler* has been a smashing success.

Watercooler is the online meeting place where guest writers, as often as not senior leaders, share their thoughts about issues of concern to Sandians. Readers, in turn, have an opportunity to join the discussion in a surprisingly open and freewheeling comments section. The *Watercooler* was, effectively, Sandia's first interactive blog, before that term was in wide currency.

And it's not pabulum or spin — not always. For sure, over the course of 10-plus years, the *Watercooler* has featured its share of articles with a distinctly corporate flavor about them. But there's enough honest self-assessment, introspection, and reflection about Sandia as an institution to make it always worth the trip to the *Watercooler* to see what Sandia leaders are thinking. And what everyday Sandians are saying. *Watercooler* writers just in recent months have grappled with issues such as institutional trust, work-life balance, and the need to rethink the propensity at Sandia toward "all-meetings, all-the-time." Do these articles have an immediate impact on life at Sandia? No, but they raise issues that leaders know are on people's minds, issues that ought to be addressed.

Rewind the clock to the year 2000. Then-Div. 10000 VP and Sandia Chief Financial officer Frank Figueroa approached Jane Zingelman, a communicator in his organization, with an idea: He wanted some sort of mechanism by which he could solicit feedback and encourage dialogue among the people who worked in Div. 10000. After some brainstorming and some back and forth, they decided to use the still-somewhat new (at Sandia) medium of the Internet, specifically, Sandia's internal web.

In the very first article for *Watercooler*, Frank talked about his intent: "[Like] the ancient watering hole, the time-honored watercooler typifies the place where people could take a break, talk to each other, get some straight talk, and trade the latest rumors. If the boss was engaged with his people, he would join them at the watercooler and deal with some of those issues. Provide some straight talk. Shed light on the rumors. What you are looking at is a reinvention of the watercooler in this internet age. When you click on the *Watercooler* button, you will be virtually there. . . ."

Jane, who — with a brief break for other duties — has been the editor, and arguably the driving force, of the *Watercooler* since its inception, notes that from the very beginning, the idea of the *Watercooler* was to foster dialogue and conversation. To make that happen, the comment capability was central to the effort. Early on, she says, she cautioned Frank against allowing anonymous comments. Frank disagreed. He felt anonymity, while it might allow some people to engage in some no-accountability complaining and Sandia-bashing, would also encourage people to feel they could contribute in useful ways without fear of reprisal or consequence.

Frank, of course, carried the day. The comment section of *Watercooler* allowed anonymous comment from the get-go, a policy that has been tested a time or two over the years when comments have crossed over an invisible line into the clearly inappropriate.

The *Watercooler* team (see box) reviews every comment, taking a mostly hands-off approach, but when a comment gets personal, when it violates Sandia's core values — particularly respect for each other — it gets pulled and deleted. It hasn't happened very often, and almost any reasonable comment, even if it is sharply critical of Sandia and its policies, stands on its own merits.

Jane now agrees that Frank was right: The anonymous option has made employees feel they can talk to their senior leadership on an equal footing. "To me," Jane says, "the *Watercooler* is the opposite of chain of command. There is an equality about all voices, all mixed up together. There is a place for that. And at Sandia the *Watercooler* is that place."

When Frank left the Labs for another job in the Lockheed Martin family, Div. 9000 VP Joe Polito became the *Watercooler's* executive champion. Like Frank, he has embraced the notion that the *Watercooler* can be an invaluable tool for gaining insights about the state of the Labs, or, more to the point, the state of mind of Labs employees.

"For 10 years," Joe says, "the *Watercooler* has been a forum to share ideas about our workplace. It's true that many articles have a practical focus, but also many have addressed the meaning of the work we do, how we can accomplish the mission better, and how we can make Sandia a better place to work. There are not many opportunities to have these open conversations. I think the *Watercooler* is unique in that regard, and I believe the continued readership engagement in the interactive discussions is evidence of active interest in the *Watercooler*."

When *Watercooler* began, it was aimed specifically at the Div. 10000 workforce. When Integrated Enabling Services was launched in the early 2000s, *Watercooler* expanded its target audience to include the entire IES community. Today, Jane says, the *Watercooler* is beginning to expand its scope, with articles that address wider Labs issues, issues of interest across the entire community. That is a trend, Jane says, that will continue. Today she actively solicits guest writers from the technical line as well as from mission support organizations.

Jane feels the *Watercooler* has had a terrific run, but is still a long way from its last act. "The way I see it," she says, "the *Watercooler* has lived up to Frank's initial vision and remains a vital tool for encouraging dialogue across the Labs. In our volatile environment, I think it can be more relevant than ever."

Watercooler behind the scenes

- Jane Zingelman — editor
- Barbara Fuge — webmaster
- Gary Hoe — editor/webmaster for middle years and current back-up editor/webmaster (recently retired)
- Jeff Young – new back-up editor
- Frank Lujan III — creator and webmaster for early years
- Jean Totten — proofreader

Mileposts

New Mexico *photos by Michelle Fleming*
California *photos by Randy Wong*

Rita Marie Baca
35 10248

Victor Baca
35 2554

Jon Bryan
30 1717

Gary Froehlich
30 5345

Victor Johnson
30 2120

Bruce Kistler
30 8249

David Myers
30 1770

Kurt Berger
25 8244

Dean Buchenauer
25 8222

Dean Clark
25 8245

Mary Gonzales
25 8240

Bob Oetken
25 8244

Karl Ricker
25 414

Mark Smith
25 2661

50 years ago . . . In a number of research and chemical labs at Sandia Laboratory are some fascinating pieces of glass apparatus. Chances are that if it is a special "one of a kind" glass system to perform a special job, it was **fabricated in Sandia's Scientific Glass Section 4224-5.** The section's five glassblowers produce an impressive array of custom pieces for Sandia's research and development organizations. Included is anything from intricate vacuum systems to tiny precision glass wafers bonded to a wide range of metals and materials.

FINAL ASSEMBLY of an intricate glass vacuum system fabricated by Sandia's Glass Shop is made by Warren Roberts.

40 years ago . . . Thirty Sandians were honored for their contributions to the SNAP-27 program. The occasion was the first anniversary of operation of the nuclear generator on the lunar surface. Continuing research has resulted in a way that spacecraft can be sterilized in a short period of time while maintaining temperatures below 212°F. The method utilizes a low level of radiation combined with heat. By international agreement, spacecraft are sterilized to reduce the possibility that micro-organisms from earth will contaminate other planets.

30 years ago . . . HERMES II UPDATED — **A new Marx bank of 128 capacitors was recently installed** in the Hermes II Radiation Simulation Facility in Area V. The capacitors in the old Marx bank (originally acquired from AWRE in England) were no longer available. The new modules are based on technology developed by Pulsed Power Systems Dept. 4250 and are similar to those used in the Particle Beam Fusion Accelerator. The powerful gamma ray beam produced by Hermes II is used for research and weapon effects simulation studies.

JESSE HARNESS (4233) inspects the new Marx bank of capacitors recently installed in the Hermes II Radiation Simulation Facility.

JIM NOVAK examines the edge of an aluminum part used to test the HIRCIS sensor.

20 years ago . . . A recent development in Intelligent Machine Principles Div. 1411 could pay off big in a number of commercial machining applications. Researchers in **the robot sensor lab have developed a sensor that "feels" the edge of machined parts** without actually touching the parts. HIRCIS — the High-Resolution Capacitive Imaging Sensor — measures electrical-field changes to produce a surface image of a machined part. [A sample image] shows tiny burrs (raised discontinuities) or cracks in a part.

10 years ago . . . Sandia and 10 companies have formed a consortium and signed a cooperative research and development agreement (CRADA) to **develop and commercialize Cold Spray™ technology.** Cold Spray™ is a rapidly emerging technology in which metal or composite powders are accelerated to supersonic velocities in a stream of compressed gas, usually helium, and used to coat a substrate by plastic deformation and bonding.

Recent Retirees

New Mexico *photos by Michelle Fleming*
California *photos by Randy Wong*

Ray Ng
42 3655

Curtis Specht
42 8231

Bob Bickes
34 414

Tony Sill
34 5740

Kathleen McCaughey
33 2700

Bill Winters
33 8365

Henry Abeyta
30 6000

Gloria Gibson
30 5096

Fred Raether
30 10265

Laura Loudermilk
29 10618

Mary Chapel
28 10654

Alice Johnson
26 8248

Barbara Cochrane
25 10530

Theo Pope
22 8949

Mary Padilla-Myers
18 5529

Bonnie Green
16 8900

Sandy Milliman
16 5231

Changes to security policies take a risk-based approach

New policies seek to eliminate 'requirements as a fix' mentality

By Stephanie Anderson

New NNSA administrative policies (NAPs) in the areas of Physical Protection and Information Security and related in part to vault-type rooms and ACREM — accountable classified removable electronic media — have been added to the management and operating contract between Sandia and NNSA.

The two NAPs, which were added to the Sandia contract in November, replace DOE directives that previously provided the requirements for the same areas. As the first two NAPs to be placed on the contract, these documents take the initial steps of changing how security is implemented across the DOE complex.

The goal is to improve security management, enhance productivity, and apply security that is commensurate with risk. In short, the changes in these two policies remove the "hows" from requirements, and place more responsibilities on the individual sites.

Sandia is required to have the policies implemented within six months from the date the NAP documents were placed in the contract. However, for the first time, the Labs will be removing requirements instead of adding them.

Since June 2009, NNSA's Defense Nuclear Security program has been working closely with NNSA field sites and DOE's Office of Health, Safety, and Security to re-examine security requirements and implementation expectations.

The process focused on adopting and adapting national standards to create a core set of NNSA security requirements. The primary goal was to develop a concise, streamlined, cost-effective set of security requirements that maintains appropriate protection strategies and practices, and are commensurate with risks.

Another objective was to eliminate the "requirements as a fix" mentality — that is, adding requirements to fix each problem — and return to a focus on security that allows the workforce to be productive while providing effective protection to ensure that national security missions are met. This objective represents a culture shift for how security is done, and will change the roles of oversight and auditing.

The NAPs take a risk-based approach and assign risk acceptance at multiple levels, while ensuring that responsibility occurs at the appropriate level. This approach assumes that resource focus will be based on the importance of assets and recognized associated risks.

Changes affecting the workforce now

Major changes from these two NAPs include:

• **The replacement of the term *"Vault-Type Room"* with the new term, *"Closed Area."*** More than a change in terminology, the redefining of the Labs' security areas allows for different alarming and testing requirements, and aligns more closely with national requirements and those of other government agencies. This, over time, is expected to greatly reduce maintenance and construction costs.

• **Elimination of ACREM and associated accountability requirements:** On Nov. 17, 2010, ACREM was designated as no longer accountable and is not required to be entered into an accountability system. All scheduled inventories of ACREM were also cancelled, effective this date. Accountable classified matter is now designated by the ***type*** of information — not by the ***format*** of the information (e.g., removable media). The only items that are still required to be entered and tracked in accountability systems are the following accountable items, in any format (document or electronic):

- Top Secret
- Sigma 14
- Designated United Kingdom
- NATO ATOMAL (a marking indicating specific procedures for handling and dissemination)
- Any matter that requires accountability because of national, international, or programmatic requirements, such as Sigma 20 and NEST/ARG.

Classified administrative specialists will continue to manage accountable items (as defined above) in their accountability systems, and apply accountability requirements to those items.

For up-to-date information about NAP changes related to security, visit: tiny.sandia.gov/NAPs.

What Dr. Martin Luther King Jr. means to me . . .

'Maybe I was born for such a time as this'

By Iris Aboytes

"Martin Luther King had the right voice at the right time," says Eunice Young (5528), "which is not to diminish the work of others. Dr. King was very strong and charismatic. He had very clear thoughts."

Martin Luther King Jr. Day is celebrated annually on the third Monday of January. Dr. King was the chief spokesman for nonviolent activism in the civil rights movement. He was assassinated by a prison escapee in 1968 on the balcony of a hotel as he went to get some fresh air before making a speech. The holiday was officially observed in all 50 states for the first time in 2000.

EUNICE YOUNG

"My parents told us, 'When a door opens, push through,'" says Eunice. "The civil rights era opened the door."

"'How dare you close the door', they would say. 'People died for you to have an opportunity to go to school. You won't quit.' There were no options. My mother, Alice Edwards, would say that once the door opened we were to take advantage of the opportunity and be the best we could be. 'Never forget the people who came before you,' she would add.

"The 60s were wrapped in violence," says Eunice. "President Kennedy, Robert Kennedy, and Malcolm X were assassinated, too. I was young when all this was going on, so I don't remember the violence, but I remember struggling to understand people's perceptions."

Her parents volunteered to have Eunice and her brothers and sisters bused to predominately white schools.

"Finding your way through middle school is hard enough," recalls Eunice. "Imagine being the only child of color in the school, let alone your grade. We had to be particularly mindful of our behavior because we were children of color. There was no such thing as Black History Month. We were fortunate. We had parents who taught us about our culture and history."

As Eunice and her siblings got older, their mother told them about the accomplishments of Martin Luther King Jr., Thurgood Marshall, and others. "She told us stories about the huge struggle and loss on many fronts," says Eunice. "They were family stories about my grandparents, where she grew up, and how she and my dad met. She recounted how she and my oldest brother traveled to see my dad. He was in the service and stationed in the south. Once they reached Kentucky, they had to move to the last compartment on the train. The stories made sense to me, because they were about family members. It makes an impression when stories are personal."

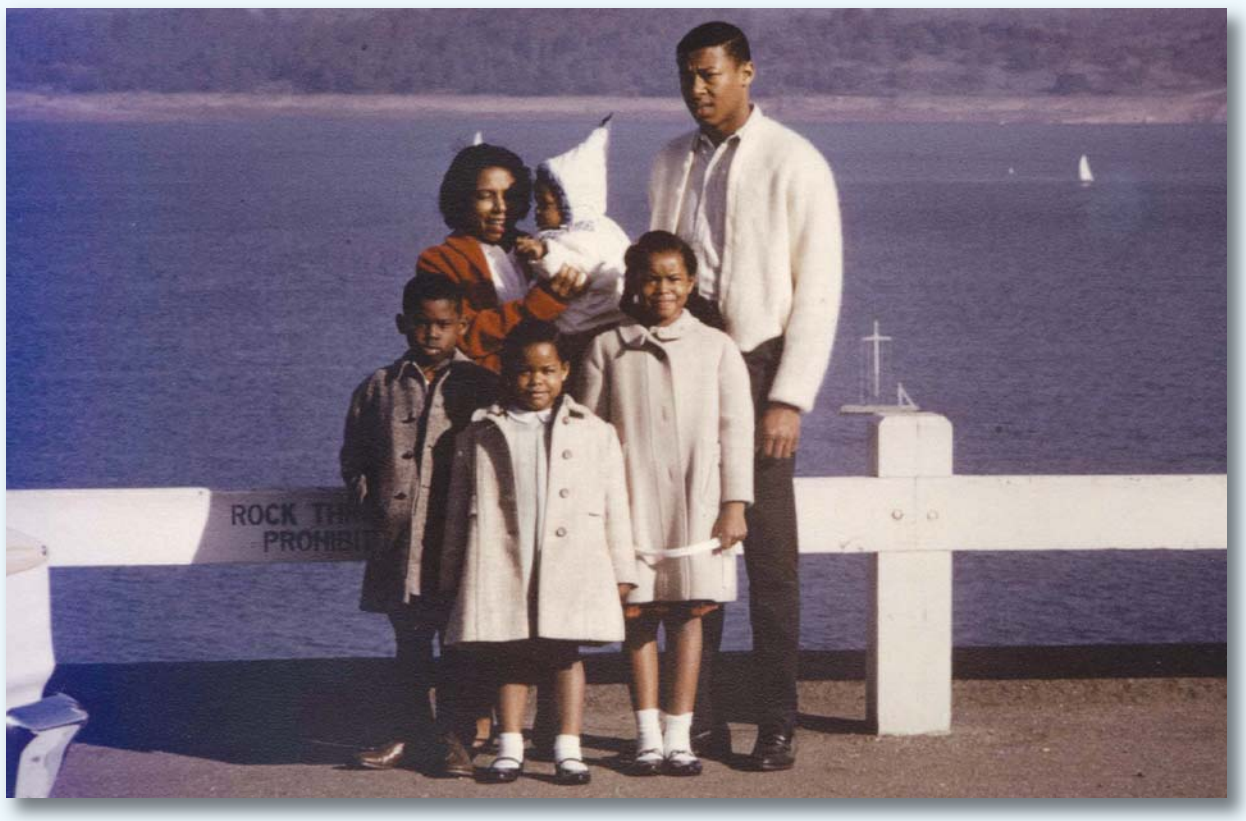
From Martin Luther King Jr.'s example, Eunice learned that she had a voice, and could use it. "A classic example was the Montgomery bus boycott," says Eunice. "You don't have to accept how you are being treated. You don't have to fight to get your way, but you do have to accept the responsibility to change the behavior. Martin Luther King demonstrated how to do that."

There were three books Eunice's mom said they had to read: *The Souls of Black Folks* by W. E. B. Dubois, *The Autobiography of Malcolm X*, as told to Alex Haley, and the biography of Martin Luther King Jr..

"I did the same with my kids," says Eunice. "I enjoyed working with them on school assignments where we modified the reading list to broaden their understanding of their culture and help others to do the same. The discussions we had over events in their lives related to Dr. King's principles of nonviolence: 'Nonviolence is not passive, but requires courage.' I taught them to find their voice and speak up, and never forget the sacrifices of those who came before them.

"There are some things you have to decide," adds Eunice. "If it is important enough you have to be all-in. That was Martin Luther King, Jr. He was willing to do what was necessary to call attention to what was wrong, sometimes creating a crisis that would not allow people to be neutral. You had to take a side. In *Esther 4:14*, the queen says, 'Maybe I was born for such a time as this.' Martin was called to service to address the conditions during the 60s. His voice was powerful and his methods effective. We all have benefited from the legislation that came out of that time. I like that his birthday is commemorated by focusing on service. I hope that we too, live up to our calling in such a time as this."

EUNICE and her siblings are pictured with their mom. Eunice is the baby.



SIGHTSEEING — Eunice and her family at the Folsom Dam while her father was stationed in Sacramento. Eunice is the child in front.

Nominations sought for 18th Annual Employee Recognition Awards

The Employee Recognition Awards program is a way for Sandians to recognize individuals and teams whose work or contributions in support of Sandia's mission and values have been exceptional. Take this opportunity to acknowledge a deserving individual or team. Nominations will be accepted through January 31.

The ERA program recognizes excellence in four categories, three for individual nominees and one for teams. The individual categories are technical excellence, exceptional service, and leadership. The team category recognizes teams whose exceptional achievements are critically enabled by teamwork and model the value of people working together toward a common goal, and proactively looking for and acting upon opportunities to improve while being fully accountable for their performance.

Nomination forms with detailed instructions are available via Sandia's internal Web homepage or at http://info.sandia.gov/era/. Each division has an ERA coordinator who is also listed via the same link .

Any current, regular Sandia employee may nominate individuals or teams. A separate nomination form must be submitted for each individual and team nomination. A combined total of 122 individuals and teams will receive corporate Employee Recognition Awards.

ERA individual winners and designated team representatives will be recognized at the Corporate Employee Recognition Night Banquet on July 9.

Dr. Martin Luther King Jr. called Americans to work for a better day

From Dr. Martin Luther King's "Eulogy for the martyred children," commemorating the four girls killed in the bombing of an African-American church in Birmingham, Ala., in 1963.

"And so today, you do not walk alone. You gave to this world wonderful children. They didn't live long lives, but they lived meaningful lives. Their lives were distressingly small in quantity, but glowingly large in quality. And no greater tribute can be paid to you as parents, and no greater epitaph can come to them as children, than where they died and what they were doing when they died. They did not die in the dives and dens of Birmingham, nor did they die discussing and listening to filthy jokes. They died between the sacred walls of the church of God and they were discussing the eternal meaning of love. This stands out as a beautiful, beautiful thing for all generations. Shakespeare had Horatio to say some beautiful words as he stood over the dead body of Hamlet. And today, as I stand over the remains of these beautiful, darling girls, I paraphrase the words of Shakespeare: Good night, sweet princesses. Good night, those who symbolize a new day. And may the flight of angels take thee to thy eternal rest. God bless you.

* * *

Martin Luther King, Jr. Day is a US federal holiday marking the birthday of Rev. Dr. Martin Luther King, Jr. It is observed on the third Monday of January each year, which is around the time of King's birthday, January 15. (It will be observed on January 17 in 2011.)