Wheels down

By Stephanie Hobby

From pre-launch in 2005 to Atlantis' final wheel stop in 2011, Sandia monitored every shuttle mission

Nine Sandians witnessed history from Mission Control at Johnson Space Center as *Atlantis* made its final flight, marking the end of NASA's 30-year space shuttle program. For the past 22 missions — every one since NASA's 2005 return to space — a team of Sandians has worked tirelessly to protect the astronauts by inspecting the orbiter's thermal protection system for damage.

NASA turned to Sandia for assistance in 2003 after *Columbia's* debris-damaged heat shield failed, which caused the tragic accident that took the lives of all seven on board. In response, a Sandia team developed the laser dynamic range imager, or LDRI, which generates 3-D images from two-dimensional video. The LDRI Orbiter Inspection System (LOIS) is attached to the orbiter's boom, and scans the heat shield twice — once 18 hours after liftoff and then again the day before re-entry — to ensure that no part of the orbiter's heat shield was damaged during launch or orbit. Without that sensor system, and its ability to detect minute anomalies, the shuttle might have remained Earthbound.

"It's been an excellent relationship between Sandia and NASA, and a true team effort," says Bob Habbit, (5711) manager of Sandia's Remote Sensing and Communications System group. "These people that we work with here are in effect co-workers. We've had a very tight relationship, so it's tough to see that relationship come to a close for this project, but again, we are very proud of what we've been able to do and the support we've provided for NASA."

The effort needed to execute the scan is extensive. In the early days, Sandia took a 24-person team to oversee all aspects of LOIS; some of that work was eventually turned over to NASA and its contractors, so for the last 17 missions, usually only nine or 10 Sandians went to Houston for the hands-on work.

"We led the inspection activity and operations in the payloads operations center for the data collections. We validated that the data was correct and that the sensor was operating properly, and then we reviewed the work of the NASA team to make sure that the data had been processed correctly," Bob says. "That was our principal role, but in the event that there was some defect found, we provided technical expertise and support to the mission management team."

(Continued on page 7)

Space shuttle *Atlantis* comes in for a predawn landing at Kennedy Space Center on July 21, marking the end of the shuttle era. (NASA photo)

Sandia LabNews

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Sandia National Laboratories

Capturing the wind's energy potential

Photo by Randy Montoya

By Stephanie Hobby

A drive across the nation's landscapes is revealing more wind farms cropping up on the horizons. As of last year, 37 states are home to at least one wind farm, and the more than 40 gigawatts of installed capacity accounted for about 3 percent of the electricity generation in the US. A 2008 DOE report, however, points to much greater potential and suggests that by 2030, 20 percent of the nation's energy needs could be supplied by wind turbines. While the idea of harnessing the wind's energy is ancient, the global scale of the industry only began to be realized in the last five years. With this realization, the growing need for highly reliable wind turbines becomes paramount, but little data exists to point out opportunities and areas for

(Continued on page 4)

Inside . . .

2011 Special Appointments announced

79 Sandians move to distinguished, senior ranks

See pages 6-7

W78 JTA flight a success

NIGHT LAUNCH AT VANDENBERG — NNSA, working with the US Air Force, recently conducted a successful W78 Joint Test Assembly (JTA) flight test. The joint flight testing program helps ensure the safety, security, and effectiveness of the US nuclear weapon stockpile. The Minuteman payload consisted of a single instrumented JTA launched from Vandenberg Air Force Base. A JTA contains a set of sensors and hardware used during flight tests to ensure that weapons perform as intended. NNSA produces JTAs in support of the Joint Surveillance Flight Test Program between DoD and NNSA. JTAs are built to simulate actual weapon configurations using as much war reserve hardware as feasible. JTAs are assembled at the Pantex Plant in Amarillo, Texas, and are not capable of nuclear yield, as they contain no special nuclear materials. The JTA includes a telemetry system that collects and transmits data on the test article during the flight. The data is fed into a reliability model developed by Sandia and Los Alamos National Laboratory to evaluate the warhead reliability. (US Air Force photo)

That's that

Exactly 42 years to the day after Neal Armstrong and Buzz Aldrin lifted off the moon, leaving Tranquility Base a silent monument to mankind's first visit to its nearest celestial neighbor, the space shuttle *Atlantis* touched down (in total darkness) at its special runway at the Kennedy Space Center in Florida. And now, for the first time in two generations, the United States doesn't have the capability to put an astronaut into space.

Oh, Americans will still fly into space and will still crew the International Space Station — it's just that they'll have to hitch a ride with the Russians to get there. That's fine; space travel is a hugely expensive proposition and international cooperation has worked out well (at least by all public appearances) on the ISS. Isn't it ironic, though, that the Russians, who lost the space race in the 1960s, are now our only ticket into orbit? When the Soviet Union, painfully aware that it was getting its clock cleaned in the frantic effort to be first to the moon, pooh-poohed the very idea of a "race," most of us figured that was just posturing. The Soviets claimed they were in space for the long haul. Sure, their technology was never as dazzling as our stuff, but guess what? They're still flying and we're not.

Having said all that, the US is still an awesome spacefaring nation. Even as our astronauts were wrapping up business on *Atlantis*, our space wizards at the Jet Propulsion Laboratory were getting photos of the giant asteroid Vesta from the *Dawn* spacecraft, which became the first probe ever to enter into orbit around an object in the main asteroid belt between Mars and Jupiter. A year from now, *Dawn* is scheduled to depart Vesta and enter into orbit around another giant asteroid, Ceres. President Obama has said that he wants the US to land astronauts on an asteroid by 2025. That's a great idea, a logical step on the way to Mars. We'll see. The Russian manned program has survived everything history has thrown at it, including the dissolution of the very nation that launched the space age in the first place. Let's hope that we, like the Russians (at least in this regard) have the right stuff, the stuff to carry on. If national prestige means anything in this day and age, I think we've taken a hit, and the sooner we can get back in the saddle (so to speak), the better.

* * *

Did you see where a new study published in *Science* describes something called "the Google effect?" A research team headed by Columbia University psychologist Betsy Sparrow has found that Google and other online search capabilities are changing the way we choose to remember things. As one writer put it in discussing the finding, "We're outsourcing 'search' from our brains to our computers." That is, if we know we'll be able to find something easily via Google or Yahoo or Bing, we don't store the information away in our own memories. We just look it up. Other findings from the research demonstrate pretty convincingly that search engines have created a mental dependency on instant access to information, to the extent that losing an Internet connection feels like the loss of a trusted friend. As the paper states, "We must remain plugged in to know what Google knows."

I find this very interesting, but I'm not sure what to make of it. In the wake of the report, there were the handwringers — Oh, this proves we're losing our ability to think — and the evangelists — This proves that computers, freeing up our brains from having to remember trivial detail, are empowering us to grasp more abstract concepts. I think I fall somewhere in between. Not that I don't use the Internet prolifically. I do. I couldn't have written this column today without access to some of the facts I've cited, but in the back of my mind, I think James Cameron may have been onto something with SkyNet, which posits a future in which we are done in by our total reliance on computers. Silly science fiction? Maybe. But the best speculative fiction can be like a canary in a coal mine.

Anyhow, there may be some evidence to back up the idea that, contrary to the title of an oft-cited 2008 article, "Is Google making us stupid," the massive increase in access to information over the past century (among other factors, like nutrition) is making us measurably smarter. I seem to recall reading something a year or so back noting that IQs in the US have been steadily increasing. I don't remember exactly where I . . . hey, I'll look it up on Google!

See you next time.

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

Sandia LabNews

Sandia National Laboratories

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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), Darrick Hurst (844-8009), Stephanie Hobby (844-0948), Heather Clark (844-3511), Tara Camacho-Lopez (284-8894), Renee Deger (284-8997), Jane Zingelman (845-0433), Michelle Fleming (Ads, Milepost photos, 844-4902), Jim Danneskiold, manager (844-0587)

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J.T. Foley (82) . . . . . May 13
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Kenneth J. Datz (73) . . . . . May 14
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IES now IMS: Integrated Mission Support

Change emphasizes importance of support services to mission success

By Jane Zingelman

Integrated Enabling Services (IES), formed in August 2001 by then-Executive VP Joan Woodard, is now going by a new name, Integrated Mission Support (IMS).

"The switch from IES to IMS," says Deputy Labs Director and Executive VP for Mission Support Kim Sawyer, "is focused and aligned with the vision and strategy to include a broader set of organizations and functions to strengthen collaboration and integration with the mission delivery organizations."

It's more than just a change in name, though. "Our new structure," Kim says, "provides a more focused vision and strategy to a broader set of organizations and functions that provide services to the mission-delivery organizations."

Kim first expressed the new focus in an April *Watercooler* article, writing, "We are all here for one objective: to complete the mission. While it is true that customers come to Sandia for our technical expertise, I wholeheartedly believe that we are all equal. Sandia cannot deliver the stellar work we are so well known for without the technical folks, but at the same time, the technical folks cannot perform that work without the enabling support and infrastructure of the organization that I am so proud to lead — Mission Support."

The name changes, but the processes for planning and providing services do not. As stated on the IMS website, "The Integrated Mission Support (IMS) Management System provides the framework for performing work within the support services organizations. The IMS structure, leadership system, integrated planning process, principles, work processes and standards, and performance assessment and assurance system are all part of the management system. The management system enables IMS management and staff to perform work in a consistent manner in an environment of improving quality and value to the customer."

TechWeb will be updated to reflect the change from IES to IMS during the course of the summer in a phased approach; the updates will be completed by the end of the fiscal year.

Keith Matzen steps down as chairman of Radiation Protection Safety Committee

Keith Matzen, director of Pulsed Power Sciences Center 1600, has completed his tenure as chairman of the Sandia Radiation Protection Safety Committee (RPSC), a role he has filled since 2006. As chairman, Keith was responsible for the oversight and continuous improvement of Sandia's Radiation Protection (RP) program. According to his colleagues, Keith's leadership and support of the RPSC has been "instrumental in maintaining the continued service the RPSC provides to the Sandia RP program and to Sandia Corporation."

During his tenure, Keith was responsible for a significant update to the Sandia Radiological Protection Procedures Manual (RPPM), an update required by a major revision of federal RP requirements. The update to the RPPM was completed seamlessly and ahead of schedule.

KEITH MATZEN receives a plaque from Jim Novak, senior manager in Dept. 4120, thanking Keith for his service as chairman of the Radiation Protection Safety Committee.

The RPSC is a line-led safety committee established in 1996 to oversee implementation of federally mandated RP requirements. The RPSC serves as an interface between the Sandia line and RP organizations. Sandias's RPSC has been recognized by DOE as a best practice for RP programs.

The RPSC has always been chaired by a line director whose organizations conduct radiological operations. Chairing a standing safety committee is often an ancillary duty requiring a significant commitment from directors who already have extremely full schedules. Their leadership is critical to the success of these committees and continuous improvements in Sandia's ES&H programs. Other directors who have led the RPSC are Kathleen McCaughey, retired, and Anthony Medina, director of Energetic Components Realization Center 2500. Andrew Orrell, director of Nuclear Energy and Fuel Cycle Programs Center 6200, has volunteered to be the next chairman of the RPSC.

Celebrate. Remember. Fight Back.

RELAY FOR LIFE — William Loo (8244), Neal and Rene Bierbaum (8245), Lisa Anderson, and Tina Chou (8229) were among 15 members of Sandia's Relay for Life team. (Photo by William Loo)

Sandia CaliforniaNews

By Allison Doughty

On Saturday, June 25, Sandia/California's 15-person Relay for Life team walked and ran more than 150 miles, raising more than $4,000 to fight cancer. The team was captained by Bryn Miyahara (8226) and Christy Turner (8237), both long-term participants in Relay for Life, the American Cancer Society's largest volunteer-driven fundraiser.

"I participate in relay because I lost one grandparent to colon cancer, another to lung cancer, and have two aunts who are breast cancer survivors," Bryn says. Both she and Christy became active in Relay for Life while college students.

"The most rewarding part of the experience is watching the opening ceremony to celebrate the Survivor's Lap," adds Bryn. "There seem to be more survivors each year, which is very inspiring." Each Relay for Life event — there were more than 5,000 in 18 countries last year — begins with a lap walked by cancer survivors.

"The best part of relay this year was the luminaria ceremony, where survivors and caregivers share their stories," says Christy. "The most touching story was from an 18-year-old who has been a cancer survivor for 17 years."

The Relay for Life slogan is "Celebrate, Remember, Fight Back" and the luminaria ceremony is the "remember" part. Participants decorate luminarias in remembrance of a loved one who has died of cancer or in support of someone battling cancer. The luminarias are then placed around the perimeter of the track at Livermore High School, the site of Livermore's relay, and in the stands to spell the words "Hope" and "Cure." As night falls, the glowing luminarias symbolize cancer's wide and devastating reach.

The other members of the Sandia team were Dolores Antonio (8659), Rene Bierbaum (8245) and husband Neal Bierbaum, Cathy Branda (8623), Tina Chou (8229), Morgan Edwinson (8527), Marilyn Hawley (8116), Will Loo (8244), Terry Spraggins (8527), Deneille Wiese-Smith (8128), Janson Wu (8112), Elaine Yang (8226), and Derek Young (8229). Four team members accounted for more than half of the team's miles: Neal Bierbaum with 25, Christy Turner with 21, Rene Bierbaum with 19, and Deneille Wiese-Smith with 13.25.

Sandians Randy Clarin (8133) and Jason Zaha (8132) also hit the track for team Live Aloha in loving memory of their friend Leslie Ocreto-Baloran, who passed away from uterine cancer last year. The 10-member, mostly Hawaiian, team raised $2,457 and completed 80 miles.

"Our team name signifies the lifestyle and purpose of why we continue to participate in Relay for Life every year," Randy says. "Our dedication and fight against cancer continues in honor of everyone with cancer, including Jason's mother, Kathy Zaha. She was diagnosed in 2010 and is a breast cancer survivor."

The Sandia team's fundraising total includes a $1,000 corporate contribution from Lockheed Martin. Special thanks to Morgan Edwinson for first initiating the corporate contribution last year. The Livermore Relay for Life raised $160,505 for cancer research, education, advocacy, and patient services. Learn more about Relay for Life at http://www.relayforlife.org/relay/.

Sandia New Mexico
Sandia California

The Sandia Dental Care Program — One Plan or Two?

Sandia's dental care program is one plan with two types of networks. This article, prepared by Sandia's Benefits team, is intended to help answer questions about the provider networks available under the Sandia dental care program. Understanding how the two Delta Dental provider networks work together under the plan will help you make the most of the dental care cost savings available to you.

Delta Dental PPO and Delta Dental Premier Networks

Sandia's dental care program has two in-network Delta Dental provider network options:

- Delta Dental Premier®
- Delta Dental PPO℠

Delta Dental Premier is the country's most extensive panel of dentists, with more than 220,900 locations across the country. Delta Dental PPO is a second, somewhat smaller (more than 141,000 locations nationally) network through which some of these participating dentists agree to deeper discounts — meaning more savings for you.

Each of these two networks has the same benefits levels under the dental care program, as shown in the following table:

Services	Delta Dental PPO Network		Delta Dental Premier Network	
	Sandia Pays	You pay	Sandia Pays	You pay
Diagnostic and Preventive Services	100%	0%	100%	0%
Basic and Restorative Services	80%	20%	80%	20%
Major Services	50%	50%	50%	50%
For more detail on the types of services that fall into the benefit categories shown above, consult the Sandia Dental Care Program (DCP) Program Summary.				

However, providers in the Delta Dental PPO network have agreed to more deeply discounted maximum approved fees than those providers in the Delta Dental Premier network.

Because the dental care program offers both network choices, anytime services are received from a dentist who participates in both Delta Dental PPO and Delta Dental Premier, the total cost of the services received will reflect the lower Delta Dental PPO maximum approved fees.

Benefit levels (percentages shown in the previous table) are the same for nonparticipating providers, but your out-of-pocket costs will typically be higher since these dentists are not subject to agreements that would require them to honor Delta Dental maximum approved fees for covered services.

To potentially save you the most money, consider selecting a Delta Dental PPO dentist, whenever possible, to reduce your out-of-pocket costs. Select a Delta Dental Premier provider when a more expansive panel of dentists is needed or desired.

Some dentists participate only in Delta Dental Premier; others participate in both networks.

Some dentists — particularly some types of specialists — may be unlikely to participate in a network that requires them to reduce their fees beyond a certain point. Other dentists — ones who participate in both Delta Dental PPO and Delta Dental Premier — have structured their practices so they can see patients with Delta Dental PPO and those with Delta Dental Premier. As mentioned before, anytime services are received from a dentist who participates in both networks, the dentist will provide treatment subject to the lower Delta Dental PPO maximum approved fees.

The table below shows how using a dentist in the Delta Dental PPO network can help reduce your out-of-pocket costs.

Note: The example shown below is based on New Mexico maximum approved fees and are current as of the date of this article. Submitted charges and maximum approved fees vary by dentist, location, provider network, and date of service. Amounts shown are illustrative only.

Example assumes a single crown procedure (CDT code 2790)		
	Delta Dental PPO provider	Delta Dental Premier provider
Dentist submitted charge	$1,142	$1,142
Delta Dental Maximum Approved Fee (network-specific)	$809	$1,025
You Pay 50% (Copayment for major services)	**$404.50**	**$512.50**

The difference in the maximum approved fees applicable under the two provider networks can result in substantial savings on a single procedure — reducing your out-of-pocket costs by more than $100 in the example shown above.

If you have any questions about your dental care program benefits, contact HBE Customer Service at 505-844-HBES (4237) or Delta Dental at 800-264-2818.

Wind

(Continued from page 1)

improvement. "Wind energy is leading our nation's and the world's clean energy movement. As we become more dependent on these energy sources, we must make sure that we are installing the most effective, viable, and reliable systems possible to transform the energy picture of the future," says Jose Zayas, (6120) senior manager for Renewable Energy Technologies.

To address this need for data, Sandia is completing the development stage to create a Continuous Reliability Enhancement database for Wind (CREW). This database will be the foundation for analyses to identify primary failures and associated improvement opportunities, enable reduced operating and maintenance costs, and provide industry benchmarks. The DOE-sponsored project focuses on the nation's utility-scale turbines of one megawatt and higher.

SANDIA is working closely with partners in the windpower industry to improve the viability and reliability of wind as a major alternative energy source. (Photo by Randy Montoya)

Data in 36 key operating parameters

"This project is the first effort to compile a comprehensive dataset that reflects the performance of the US wind fleet. With better understanding of current performance of the major turbine systems, wind operators can direct their efforts toward improvements in those areas that will drive increased reliability and efficiency," says team lead Bridget McKenney (6121).

By tapping into turbines' existing supervisory control and data acquisition (SCADA) industrial control systems, Sandia researchers are collecting information on 36 key operating parameters such as wind speed, blade angles, component temperatures, and torques. Every two seconds, a wind turbine's SCADA system captures a picture of how the turbine and its components are performing relative to a defined operating envelope and its environment. Currently, four wind plant owner/operators are participating in the development phase of the CREW project by providing this SCADA data to Sandia's CREW database via automated data collection software developed by Strategic Power Systems (SPS). SPS is a key partner with many years of experience in collecting high-volume data from steam and gas turbines via a proprietary software tool. SPS has converted this tool to collect data from wind turbines.

"Our assignment from DOE is to characterize the national fleet. We're not looking at one technology, one location, or one company," says Alistair Ogilvie, CREW database lead (6121). "We want to look at the entire US fleet and create baseline statistics for the industry to be able to say, 'This is what you and your competitors should be trying to achieve.'"

To reach a statistically representative baseline, CREW will aggregate data received from all participating wind plants. The current data set represents approximately 2 percent of the nation's wind turbines, but as the project grows, CREW researchers expect to include approximately 20 percent of turbines to establish representative benchmarks.

The volume of data to sift through is mind-bending. The print collections of the Library of Congress are roughly 10 terabytes; CREW's data set, with dozens of variables taken at two-second intervals from a fifth of the nation's wind turbines, is expected to dwarf that. Over the past six months, four pilot plants with a combined 345 turbines, or about 2 percent of the nation's installed turbines, have generated two terabytes of raw data. This data has been provided to the CREW database by the SPS collection tool. To process this enormous dataset into a usable database that can readily support a wide variety of queries, CREW turned to Sandia's Enterprise Database Administration team (9538).

Identifying likely failure points

"The goal is not to have the biggest database — the goal is to transform it into a useful dataset for the analyst," says Michael Mink (9538). "We're taking the raw data on weather, wind speed, angles of the blades, and so on, at two-second intervals, taking time chunks of that, summarizing it and putting it into another database that people can query easily and quickly."

Determining which components are most likely to fail is an important part of benchmarking. Major turbine systems include a set of three blades, rotor, shaft, generator and gearbox, any of which have the potential to fail. Turbines that are down for maintenance or repair are expensive — in addition to lost productivity, the cost of hiring a crane for repairs can be upwards of $250,000, and because there are only a few cranes in the nation large enough to handle turbine heights and component weights, an operator might wait for months before the turbine is up and running again.

The CREW team will use the dataset to identify the top turbine systems and components responsible for the majority of downtime, which will then inform specific research and technology improvements. "If we can identify those components most at risk, we can provide the industry and DOE with information on which ones need further research and where funding should go," says Alistair. Components that were once considered the most vulnerable become more reliable, allowing the industry to move on to addressing the next challenge.

"We're excited about the results so far, and look forward to the next few years, as we make an important contribution to our industry to improve the reliability through a component-level focus," Bridget says. "It's an important project for the industry and the nation as a whole, and we could not have been successful without the outstanding partnership of Corporate Computing and SPS, and the support and leadership from DOE. Together, we can share our expertise to help shape the future of the nation's wind energy generation."

Dealing with 10,000 truckloads of data

The Continuous Reliability Enhancement for Wind (CREW) program is wrapping up its pilot phase, and has already generated 68 billion rows of data. Over its lifetime, the project is expected to produce more than 10 terabytes of data, roughly the equivalent of 10,000 pickup trucks filled with books. Such a fantastic amount of information would be nearly impossible to wade through, but the CREW team turned to Sandia's Enterprise Database Administration team (9538) to turn it into something usable. The team has taken the 68 billion rows of data and transformed it into a structured database format to help CREW better use the information they've collected.

"Earlier this year, we formed a five-person Process Innovation Team focused on supporting customers working with a terabyte of data or more," says Cynthia Huber (9538), manager of Enterprise Database Administration (EDA). "We have built new and innovative processes, designed to handle big data loads and transformations, on top of our already tried-and-true database support standards. CREW's requirements for consuming big data fit well with our goal of enabling Sandia's missions in managing large volumes of data, so we are enthusiastically supporting that effort."

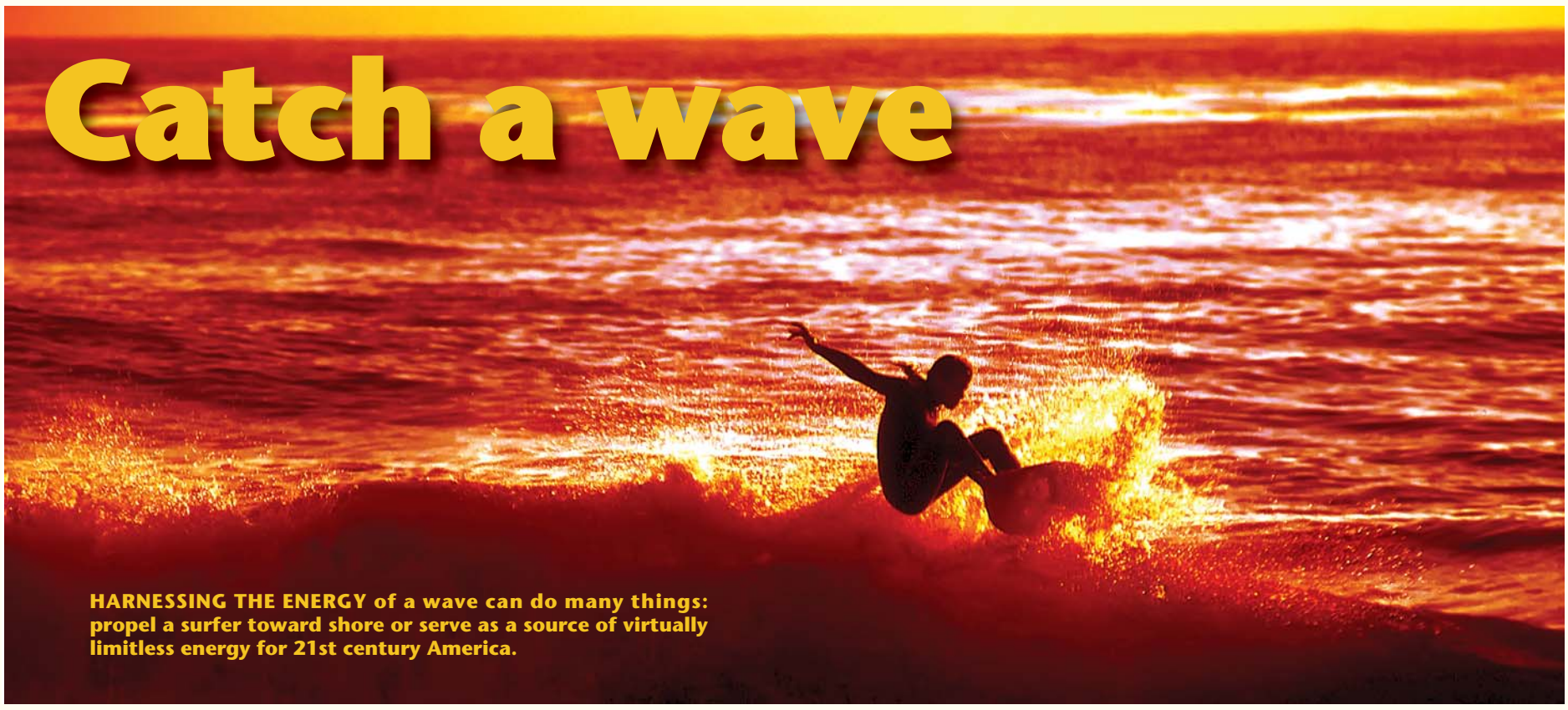
The techniques used by EDA are expected to translate to multiple other industries, such as solar, that have the potential to generate large quantities of data, but also need that data to be user-friendly. With the mission of providing valuable database administration services to Sandia's applications development community that ensure the integrity, availability, recoverability, accessibility, integration, and security of Sandia's corporate data, the EDA is continually working to meet Sandia's database needs. Working with terabyte-scale projects is an evolving field, but the EDA is well-equipped to handle such challenges.

"We have a highly skilled group of database administrators with many years of multiplatform database management experience servicing both enterprise and mission level applications," Cynthia says. "Additionally, our ability to scale up to handle these data volumes is made possible by the excellent support we receive from our enterprise IT partner Infrastructure Computing Services (9324), which provides the system and storage administration for the database servers that ultimately host this capability. They provide us the hardware footprint that enables the database administrator to perform the data integration and transformation necessary to deliver valuable and secure data to our customers. We're experts in data integration, data transformations and securing data for customer use."

For more information about the Enterprise Database Administration's capabilities, visit http://info.sandia.gov/enterprise-dba. — *Stephanie Hobby*

Sandia honors those who serve

WOUNDED WARRIORS Cheston Bailon (second from left), his brother John Bailon (center), and Jeddah Deloria (right), are joined by Executive VP Jerry McDowell (left), Labs Director Paul Hommert (third from left), Div. 5000 VP Jeff Isaacson (third from right), and Center 5600 Director James Peery (second from right) in front of a special commemorative wall on display in the Steve Schiff Auditorium. The wall, dedicated to those who serve, have served, or support those who serve in the nation's military, will provide Sandians a chance to write notes of appreciation and support for members of the armed forces and their families. The wall will be divided into several pieces and will be rotated to various locations around the Labs both in New Mexico and California. At an upcoming event, the permanent home for the wall will be announced. Before the unveiling of the wall, the Bailon brothers and Deloria shared their experiences in combat in Afghanistan and Iraq. In his introduction of the speakers, Paul praised the "extraordinary professionalism, dedication, and courage of the men and women who serve in our armed forces." At a time when there are many divisions within our society, Paul said, the example of our military personnel "serves as a beacon of unification for us as Americans, for our country." (Photo by Darrick Hurst)



HARNESSING THE ENERGY of a wave can do many things: propel a surfer toward shore or serve as a source of virtually limitless energy for 21st century America.

Sandia researchers use wind power expertise to help create industry in US for tidal, wave energy production

Story by Heather Clark • Photos by Randy Montoya

A dearth of public information, complicated marine environments, and even the corrosive effects of bubbles are some challenges facing companies that seek to produce energy from river currents, tides, and waves, so Sandia is helping companies on the frontier of the coming marine hydrokinetics (MHK) industry navigate these and other concerns.

Through DOE support for Sandia's MHK research, the Labs plans to release its first report this fall analyzing the computer-simulated performance of a tidal turbine, a river turbine, and a wave-point absorber, which bobs on the surface to capture energy from waves, says engineer Rich Jepsen (6122). Eventually, Sandia will analyze up to 10 devices.

MHK is the study of harnessing the kinetic energy that results from the motion of water.

"The current MHK industry looks a lot like wind did 30 years ago," says Daniel Laird, manager of Water Power Technologies Dept. 6122. "We want to take what we've learned to compress the MHK development from the 30 years it took wind energy down to 10 years."

Sandia's analysis aims to accelerate the MHK industry in the US by showing companies and DOE where investments can be made to bring down the costs of using America's waterways and the oceans to produce energy — whether from an engineering, environmental permitting, or administrative standpoint. Companies will be able to use these reference models to make their own decisions about which design or system components are worth their investment, Rich says.

Real-world experience

"As a nation, we don't have a handle on what the performance is and the actual cost of the energy that is generated," Rich says.

Sandia also is getting real-world experience through its partnership with New York City-based Verdant Power, which is at the forefront of the MHK industry.

Verdant has operated the world's first grid-connected array of multiple tidal turbines in the East River and will operate the first tidal power plant in the country, says Dean Corren, the company's director of marine current technology.

After Sandia began working with Verdant in 2008, DOE awarded an Advanced Water Power Project grant that expanded the partnership to include the National Renewable Energy Laboratory in Golden, Colo.

Verdant's turbines are mounted on towers on the river bottom, turning with the changing currents to always point downstream so they catch the currents and produce energy as they rotate.

"The goal of the project was for Sandia to design a stronger, more efficient blade made of composite materials, similar to what's used in wind," says Sandia engineer Josh Paquette (6121).

Sandia surveyed and studied prospective blade foil shapes, performed essential, computational fluid-dynamics analyses of the rotor, and then of the turbine as a whole, Corren says.

The result is a blade that is stronger and thicker, more resistant to corrosion and cavitation, and one that can be mass-manufactured, Josh and Corren say. Cavitation is the creation of tiny water vapor bubbles at low pressure that can collapse and damage the surface of the blade.

TIDAL SURGE — Engineer Rich Jepson (6122), left, and hydrologist Jesse Roberts (6122), right, with their senior manager, Jose Zayas (6120), center, in front of Sandia's Water Impact Facility, which Rich hopes can one day be used by the marine hydrokinetics (MHK) industry for controlled tests of tidal turbines and wave devices.

"When these bubbles collapse, they put out a lot of energy and it can be very erosive, so it can literally chew up an underwater propeller," Josh says. "We tackled this issue using the same methods we used in wind, where we did computational fluid-dynamics analysis of the blade."

This Fifth Generation Free Flow System is being built by Verdant and will be tested this fall. Should all go as planned, Corren says, Verdant plans in 2012 to begin installing, in phases, 30 turbines in the East River, which at peak production could supply enough energy for the equivalent of about 700 homes.

Operate for three years unattended

Earlier generations of turbines were tested for two months; this commercial-type turbine is designed to operate for three years unattended, Corren says.

Sandia also is learning from Verdant's experience in the water by studying the debris, mud, and biological contaminants that grow on the underwater turbines, Josh says.

Other companies and government agencies have had a difficult time obtaining research and performance data because nearly all of it is proprietary.

When Sandia started its research, DOE noticed this and asked Sandia to create reference models that established benchmarks companies could use to test their own custom models to determine whether they should enter the market, Rich says.

Sandia is analyzing basic designs, environmental factors, and costs, Rich says.

Sandia hydrologist Jesse Roberts (6122) says an array optimization tool developed by Sandia specifically for MHK devices analyzes both the effects of the environment on the devices and, conversely, the devices' effects on the environment.

"You can use this tool to place turbines in whatever fashion you think is appropriate throughout your water column to see how they interact with each other," he says. "It will tell you how much energy you converted with that layout and how the water flow changes throughout the system, near and far field."

While the water flow is faster near the surface, potentially creating more energy, turbines sometimes can't be placed too close or they would interfere with shipping, recreation, or wildlife, such as birds that dive deeply for their food, Jesse says.

Tide power is 'weather-proof'

Sandia provides information about how underwater turbines and wave devices change the physical environment to aquatic ecologists at partner labs, who study the effects on marine life. Jesse says that while each aquatic environment is different, the more questions that can be answered up front, the better companies can predict environmental permitting costs or research requirements.

Early estimates show that a significant amount of the current US national electricity demand may eventually be met through tidal and wave energy generation, and, moreover, these power sources will be located near population centers on the East and West coasts where demand for energy is high.

Tidal power in estuaries and straits is predictable and steady, as opposed to wind and solar power, Corren says. "We look up at the moon and can know what's going on, and we don't have worry about the weather," he says.

Rich also is looking at another potential resource for the MHK industry at Sandia, a 50-foot-deep pool with a nearby large electrical power source that could be converted into a large-scale facility to generate waves under controlled conditions needed for accurate large-scale testing of devices.

With some additional investment, "our lake is big enough that companies could put in a prototype and do full-system tests all the way to generating electricity," Rich says.

There are signs that Sandia's efforts to help the MHK industry are paying off. Rich says a growing number of companies are becoming interested in Sandia's work on the array optimization tool and materials and coating research for the turbine blades.

"Being in this industry at the early stage, being able to define the future of an entire industry is interesting. It's like being a researcher in wind energy 20 to 30 years ago," Jesse says. "Hopefully, we'll be able to follow this for quite some time and help influence the direction it goes."

79 Sandians move into Distinguished, Senior ranks

Sandia's special appointments represent employees from all areas of the Labs' operations: Senior Scientist/Engineers, Distinguished Members of Technical Staff, Distinguished Members of Laboratory Staff, Distinguished Technologists, and Distinguished Administrative Staff Associates. Seventy-nine Sandians have been honored with special appointments this year.

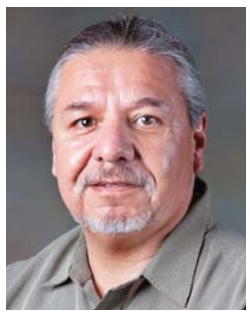
According to Corporate Policy System documentation, "Placement in the Distinguished Level signifies a promotion to the highest level of the Technical Staff, Laboratory Staff, Technologist, or Administrative Staff Associate ladder. This level is different from the other levels in that it is subject to a 10 percent population limitation to preserve the distinction of the level."

Employees selected for the new levels have been recognized with a special plaque and a nonbase salary award, in addition to this special mention in the *Lab News*.

As has been its tradition for many years, the *Lab News* presents photographs of Sandians who have received special appointments this year. Not pictured here are: Michael Bencoe (9513) DMTS; Reid Bennet (5918) DMTS; Patricia Dickens (4031) DMLS; Anand Ganti (9336) DMTS; Steve Gossage (9336) Sr. Scientist; Sharla Haley (11000) DMLS; Donald King (1384) DMTS; Bonnie Ladd (8532 (DTNG); Paul Schrader (8353) DTNG; and Francine Vigil (4024) DMTS.


Mark Allen
DMLS 8532


Brad Altman
DMTS 412


Lawrence (Larry) Arellano
DMTS 9538


David L. Barr
DMTS 2952


Daniel L. Buller
DTNG 1111


Robert (Mike) Cahoon
Senior Eng/Sci 9310


Sharon Chino
DMLS 10549

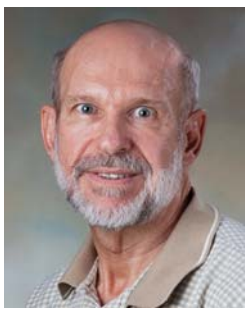

John Clauss
DMTS 413


Christine Cooper
DMLS 10693


Christine Coverdale
DMTS 5945


Mary H. Crawford
SRSE 1123


Todd Criel
DMTS 5358


John Darby
DMTS 241


Frank M. Delnick
DMTS 2546


Michael P. Desjarlais
SRSE 1640


Patrick Doty
DMTS 8131


Roberta (Robbie) Evanoff
DMTS 9342


Todd Fine
DMTS 5637


Bruce D. Fishel
DTNG 2548


John Franklin
SRSE 240


Mike Frisch
DTNG 8513


Richard Gay
DMTS 8949


Brad J. Godfrey
DMTS 2115


Jaime Gomez
DMTS 5732


Orlando Griego
DTNG 4826


Christine Gutierrez
DASA 10685


Kenneth W. Gwinn
DMTS 1524


Donald J. Hanson
DTNG 1387


Marcia Jacobs
DTNG 8949


Lawrence Jones
DMTS 5416


S. Todd Jones
DMTS 5631


Samuel (Sam) Jones
DMTS 9342

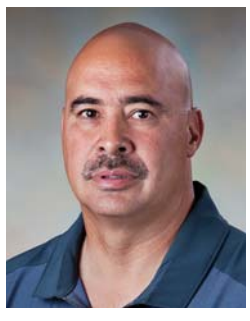

Scott E. Klenke
DMTS 2115


George Lasche
DMTS 6633


Wei-Yang Lu
DMTS 8246


Lee H. Marshall
DMTS 2666


Jeffrey B. Martin
DMTS 5713


David Martinez
DTNG 9324


Douglas Medlin
DMTS 8656


Darlene Moore
DMTS 4024


Bryant Morgan
DTNG 8236


Noel Nachtigal
DMTS 8958


Nancy Nesbitt
DMLS 10654


Brian Oden
DTNG 8224


Joseph Oefelein
DMTS 8351


Fred Oppel
DMTS 6134


Dave Peercy
SRSE 421


Charlotte Perry
DMLS 10648


Anita Reiser
DMTS 4144


John Richards
DMTS 5448


Ronald L. Richardson
DTNG 2956


Jose Saloio Jr.
DMTS 5943


Jon Salton
DMTS 6533


Richard A. Sarfaty
DMTS 2200


Sonoya Shanks
DMTS 4121


Carl Sicking
DMTS 5946


R. Joseph Simonson
DMTS 1716


Melissa Simpson
DASA 8529


Don Small
DMTS 5348


James A. Smith
DMTS 4826


Brian Somerday
DMTS 8222


Richard Steele
DMLS 4024


Peter Stromberg
DMTS 5577


Jeffery Y. Tsao
DMTS 1120


Susan Vosburg
DMTS 4137


Jim Walkup
DMTS 5638


Yifeng Wang
DMTS 6222


David R. Wheeler
DMTS 1714


LeRoy Whinnery
DMTS 8223

End of shuttle program evokes 'conflicting emotions' in Sandia team

(Continued from page 1)

Sandia's role extended beyond the launch and re-entry; team members worked intensely before, during, and after each mission to ensure everything went smoothly.

"After every touchdown, once the orbiter returned to Kennedy, we did a full checkout and calibration on LOIS, and then we would integrate it back to the orbiter at the Orbiter Processing Facility," Bob says. "Before the next launch, our team would again test the system on the launch pad before the payload bay doors were closed." Those efforts sometimes came at great personal sacrifice to Sandia's team, as many had to work through holidays and family occasions like birthdays and anniversaries. "We're all very happy to do it because of the importance of our work to the mission."

A desire to continue NASA partnership

The shuttle program launched 359 astronauts into space since its inception in 1981, was responsible for transporting and maintaining the Hubble Telescope (which captured its millionth observation on July 4), and was the workhorse that assembled the International Space Station. As the nation waits to find out what the next manned mission in space entails, Sandia's team is already participating in panels and committees to explore NASA's future needs.

"There is certainly a desire to continue that partnership; we feel like we've provided great value to NASA and the shuttle program. Without our sensor and our ability to provide the confidence needed for a truly high-quality inspection, the whole complexion of the shuttle program would have been very different," Bob says.

NASA gave Sandia a tremendous honor after exceptional work during STS-131 in April 2010. NASA managers invited Sandia's team to be part of the STS-131 plaque-hanging ceremony, a long-standing tradition to acknowledge outstanding efforts during the mission. The ceremony took place in the Mission Evaluation Room's conference room, which is across the hall from the historic Apollo Mission Control Center.

Sandia's multidisciplinary effort for the LOIS program has spanned the Labs and has included people from divisions 2000, 5000, and 9000. Without such a collaborative effort, Bob says, the LOIS effort would not have been possible.

Sandia's final inspection of *Atlantis* was July 19, and while everything checked out and all went smoothly, there was a hint of sadness among the team that day.

Bob wrote in an email to his colleagues: "This milestone is met with conflicting emotions — a great deal of pride and accomplishment for an excellent contribution to the nation and sadness to see Sandia's NASA shuttle program partnership come to closure."


THE SANDIA LOIS GROUND STATION in the Payloads Operation Control Center, Mission Control, Houston.

44 individuals, 80 teams

2011 Employee Recognition Awards program honors teams, individuals for exceptional contributions

More than 300 Sandians — individuals, team representatives, and their guests — gathered July 9 at the Embassy Suites Hotel in Albuquerque for the 2011 Employee Recognition Night, Sandia's annual celebration of exceptional service, leadership, technical accomplishment, and teamwork.

This year, the awards honored 44 individuals and 80 teams for their contributions to Sandia's mission success.

Labs Director Paul Hommert wrote in the awards program, "I congratulate you on your achievements, both as individual contributors and as members of outstanding teams. . . . It is especially important that we celebrate with family members of our outstanding contributors, who are part of our larger Sandia family, and I welcome and thank them for their support.

"As we celebrate, I know that you will remember that your achievements are part of the Laboratory-wide effort contributed by every member of our workforce to provide exceptional service to the nation. We are proud of you and grateful for your excellent work."

The individual recipients are pictured here and on the next page. A complete listing of team winners and team citations and the names of individual team members begins below, right. Individual citations are on TechWeb.

Not pictured among individual winners: Cynthia J. Alvine, John P. Hinton, Ryan Layton, Karim M. Mahrous, Andy J. Martinez, Charles J. Mueller, Lisa M. Shannon

Individual honorees


Iris Aboytes
3601


Karen Sienkiewich-Aguilar 9532


Andrew Allerman
1126


Christopher Apblett
1815


Denise Borrego
10653


Amy Bowen
10656


Anne Chavez
10651


Henry Duong
416


Tracie Durbin
1513


Carol Ferguson
10545

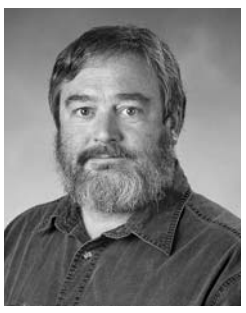

Patrick Finley
6131


Kathryn Gabaldon
10668


Francis Hansen
6914


James Heise
5747


Sheryl Hingorani
250


Christopher Hogg
5562


Adam Jimenez
2554


Valerie Jimenez
10628

Team honorees

Height-of-Burst Requirements for the B61 Life Extension Program

For developing flexible height-of-burst requirements for the B61 Life Extension Program that will minimize that program's technical risk while meeting military effectiveness goals.

Team members: Steve Hatch, John L. Darby, Jeff Pankonin, Doug Weiss, Matt Kerschen, Rick Heintzleman

Unique Signal Development for the B61 Life Extension Program

For developing a more robust unique signal to close the B61 LEP's strong links, which will strengthen the nuclear safety of the refurbished weapon.

Team members: John L. Darby, Jeffrey D. Brewer, Kenneth C. Chen

1513 Contamination Control Team

The team provided exceptional service to Nexus by cleaning and certifying flight hardware during the 11-month shutdown of the Precision Cleaning Facility.

Team members: Melissa Yaklin, David A. Barringer, Denise Tibbetts, Shane Adee, Kim M. Archuleta, David A. Pattison, Greg Koenig

Application of QASPR to Threat Encounters

The team extended the QASPR qualification approach to encompass threat radiation scenarios for the first time.

Team members: Tom Laub, Joseph Castro, Chuck Hembree, Patrick Griffin, Philip Cooper, Jamie E. Cash, Wu-Ching Cheng, K. Russell Depriest, Edward Parma Jr., Eric Rankin

B61 Comprehensive Abnormal Thermal QMU Simulation Study Team

An integrated team of analysts, validation experts, and code developers completed a comprehensive QMU assessment of thermal safety for the B61 stockpile system.

Team members: Samuel Subia, Dean Dobranich, Amanda Dodd, David Noble, Nicholas D. Francis, Roy Hogan, Kevin Dowding, Brian Carnes, Stefan Domino, David Glaze, Gregory Wagner

Chip-Scale Atomic Clock Laser Development Team

This DARPA-funded team created custom vertical-cavity surface-emitting lasers enabling the realization of the first commercial chip-scale atomic clock with Symmetricom and Draper Laboratory.

Team members: Kent Geib, Victoria Sanchez, Darwin Serkland, Gordon Keeler, Greg Peake, Terry Hargett, Thomas M. Bauer

Gamma Irradiation Facility (GIF) Source Disposition Team

The team completed the shipment of more than 10,000 curies of non-certified radioactive Co-60 source pins to their final disposition in Canada.

Team members: Mary Horvath, Karen Pickard, David Siddoway, Mitchell Callahan, Steve Bonadore, Christopher Barth, Todd Erenstein, Donald Hanson, Jason Mays, Craig Hauber, Kevin Cooley, Bryan Green, Ed Finley, John Garcia, R. Zane Lawson, Maryla Olszewska-Wasiolek, Michael Torneby, Anthony Baca

IBL Accelerator Systems Move Team

For safely and efficiently moving all of the existing accelerator equipment and installing the new equipment into the Ion Beam Laboratory.

Team members: Bruce McWatters, James Banks, Daniel Buller, Daniel Perry, Stuart Van Deusen

Magnetic Devices Product Realization Team

This award is in recognition for the successful acceptance and delivery in 2010 of over 10,000 mark quality magnetic components to the Kansas City Plant.

Team members: Christina Benavidez, Amy Levan, Lourdes Romero, Debra Chavez, Tristan Walters, Ryan Anderson, Paul Vrabel, Jack F. Everett, Paul R. Sedillo, Robert O. Sanchez, Daniel Hughes

Metamaterial Science and Technology Grand Challenge LDRD Team

For exceptional innovation and execution in the invention and demonstration of world's first wafer-scale 3-D Membrane-Projection Lithography (MPL) and Dielectric-Resonator metamaterials, under the MST GS-LDRD.

Team members: Jon Ihlefeld, Paul Clem, Sally Samora, Hung (Jacques) Loui, Ting S. Luk, Bruce Burckel, Igal Brener, Joel Wendt, Michael B. Sinclair, Larry Warne, William A. Johnson, Lorena Basilio, Daniel Bender, James Carroll, Paul Davids, Shawn Dirk, Ihab El-Kady, A. Robert Ellis, William Langston, David Peters, Roger Rasberry, Charles Reinke, Eric Shaner, Gregory Ten Eyck, Michael Wanke, Linda Wood, John Anderson

Microresonator Team

For building a world class program in the science and technology of micro-resonating devices, including lithographically defined radio frequency acoustic filters and oscillators and inertial sensors.

Team members: Roy Olsson, Michael Baker, Todd Bauer, Darren Branch, Peggy Clews, Scott Habermehl, Bongsang Kim, Manuel Montano, Katherine Myers, Christopher Nordquist, Ted Parson, Jason Payne, Tracy Peterson, Christopher Rodenbeck, James Stevens, Jeffrey Stevens, Kenneth Wojciechowski, Maryam Ziaei-Moayyed, Christine Ford, Christina Benavidez

New Mexico Small Business Assistance (NMSBA) Program

In recognition of the outstanding achievement of bringing the technology and expertise of Sandia National Laboratories to small businesses throughout New Mexico.

Team members: Jackie Kerby Moore, Genero Montoya, Sharon Evans

Quantum Information Science & Technology (QIST) Grand Challenge Team

The QIST team accomplished a broad, grand challenge scale, innovative, crossdisciplinary effort, which uniquely positioned Sandia in quantum science and technology for the nation.

Team members: Ralph Young, Thomas M. Gurrieri, Andrew J. Londahl, Tammy Pluym, Rajib, Rahman, Beverly Silva, Robert Grubbs, Jeff Stevens, Tom Tarman, Nathan Bishop, Bob Carr, James E. Levy, Joel Wendt, Steve Carr, Rusty Gillen, John Eric Bower, Lisa A. Tracy, Michael Lilly, Malcolm Carroll, Edward Bielejec, Anand Ganti, Matthew Grace, Jason Hamlet, Anthony McDonald, Bruce McWatters, Richard Muller, Erik Nielsen, Uzoma Onunkwo, Cynthia Phillips, Wayne Witzel, Eric Nordberg, Harold Stalford

Sandia's Cielo Acceptance Team

For the dedicated and sustained effort required to bring up the Cielo computer platform and complete acceptance testing within schedule.

Team members: Kevin Pedretti, Lisa Ice, Douglas Doerfler, Ruth Klundt, Suzanne Kelly, John Noe, Paul Lin, James Laros, Robert A. Balance, Constantine "Dino" Pavlokos, Courtney Vaughan, Alan Scott, Joel Stevenson, Ron Brightwell, Kenneth Alvin, James Ang, Brian Barrett, Sudip Dosanjh, Karen Haskell, Karl Hemmert, Joseph Maestas, Susan Mcree, John Naegle, Mahesh Rajan, David Roberts, Sandra Warner

Winning X-Caliber Proposal for the DARPA/UHPC Program

In recognition for the creation of a winning Sandia-led DARPA proposal to codesign prototype computer architectures with an advanced memory subsystem and associated system software that reinvents computing.

Team members: Richard Murphy, James Ang, Brian Barrett, Richard Barrett, Ronald Brightwell, David Campbell, Karl Hemmert, Michael Heroux, Anthony Lentine, Kevin Pedretti, Arun Rodrigues, Subhash Shinde, Dylan Stark, John Teifel, Kyle Wheeler, David Bayliss, Mike Black, Harold Stalford

Z Plutonium Team

For engineering and operations excellence in re-establishing the capability to perform experiments with plutonium samples on Sandia's Z machine.

Team members: Michael Jones, Mike R. Lopez, Robert Miltenberger, Gregory Natoni, Joe Garde, Tommy Mulville, Eric Breden, Roy K. Bonsack, Matt Kernaghan, William A. Stygar, Charles W. Nakhleh, Roger Harmon, Daniel Sandoval, Finis Long, Mike Sullivan, Dean Rovang, Decker Spencer, G. Randy McKee, Todd Culp, Jean-Paul David, Aaron Edens, Heath Hanshaw, Lisa Hooper, Mark L. Kiefer, Marcus Knudson, Albert Owen

B53 Dismantlement Team

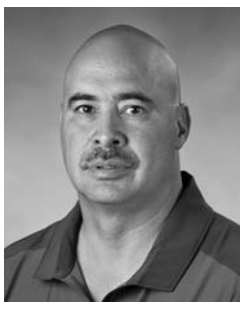
The B53 dismantlement team successfully developed and implemented the dismantlement process utilizing strict safety standards resulting in commencement of B53 dismantlement operations in October 2010.

Team members: Dave Tallant, Anh Lai, Cythia Kajder, Kimball Merewether, Tom Lin, Daniel A. Summers, Henry Apodaca, Mike Eckart, Martin Fuentes,

(Continued on next page)


Greg Kirsch
4849


Laura Lenberg
9329


David Martinez
9324


Carrie Mccandless
Mcphee 9312


Katheryn Pape
2111


Orlinda Reckaway
10654


Susan Rempe
8635

(Continued from preceding page)

Jason D. Morris, Mike Rhoads, Debbie Lee Campos, Mark Greenslete, Kenneth Gwinn, Betty Whitfield, Earl Graff

Common AF&F 90-Day Study Team

For producing multiple conceptual designs and the corresponding prototype models demonstrating the feasibility of interchanging fuze components between the W88, W78, and W87 re-entry systems.

Team members: Bill Nance, Steve Harris, Hans Papenguth, Michael F. Rimbert, Celeste A. Drewien, Jerry Adams, Danny Thomas, Kevin Campbell, Patrick A. Smith, Brandon Welch, Robert Shepherd, Gary J. Fischer, Anthony Radler, Gilbert Benavides, Dante Berry, George Clark, Daniel Dorsey, John Dye, David Fordham, Timothy Locke, Amy Rice, Scott Slezak, Todd Sterk, Donald Waye, Ernest Wilson, Robert Naegeli

DOI CTO Review Team

Recognition for significant contributions required to support an in-depth review by Sandia's CTO to assess the DOI Firing Subsystem being developed for the B61 LEP.

Team members: Greg Wickstrom, Ronald Diegle, T. J. Williams, Karl N. Schrader, Kenneth Eras, Anthony Geller, James Klarkowski, Alan Mar, Jeffrey Martin, Jared McLaughlin, Daniel Petersen, Janet Sjulin, Crystal Carrasco-Ruiz, Brad Pearce

Electronic Neutron Generator Team

This team has achieved the first-ever product realization, including a new design, for an ELNG at Sandia.

Team members: Barbara Wells, Jedediah Alderete, Pamela Dellinger, George Floe, Pierrette Gorman, J. Michael Rhoads, Dave Tallant

Extended Navy Test Bed (ENTB) Program Delivery Team

The Extended Navy Test Bed Program delivery team is recognized for their dedicated support of more than 30 Navy flight development and testing missions.

Team members: Micah Lillrose, James DeAguero, Charles Egbom, Nathan Holle, Shawn Kerr, Gary Ashcraft, Gordon Grimm, James Metzler, Kathy Branagan, David Irwin, Larry Sheets, Michael von David

Flight Termination System (FTS) Team

For recognition of delivery of an Integrated Flight Termination Qualification System for the Advanced Hypersonic Weapon Program.

Team members: John Gonzales, Lila Ashley, Mark Beader, Fernando Bitsie, Jerome Cap, Ricco Carrasco, Donald David, William Escapule, Armanda Evans, Joseph Frisbie, Steven Greene, David Gurule, David Jones, George Leuenberger, Randal Lockhart, Christian Maestas, Charles Martin, Sharlene McLane, Charles Olguin, Eric Pulling, Kanamu Pupuhi, Troy Satterthwait, Matthew Sena, Kenneth Smith, Russell Walker

MC4277 Neutron Tube Yield Improvement Team

MC4277 neutron tube yields were significantly increased by solving runaway and delay time problems, which saved more than $8 million in an eight-month period.

Team members: Loren Espada, Shelia Jones, Anne Benz, Debbie Perreault, Paul Morrison, Matt Senkow, Dan Kettleborough, Keith Meredith, Korrie Mabray, John Nguyen, Mark Poiles, Don M. Lifke, Ken Morris, Roger Moore, David Lopez, Gary Pressly, Bruce Bowles, Wesley Bruno, Thomas Dickman, Juan Elizondo-Decanini, Robert Ferrizz, Randolph Herrick, MaryAnn Olascoaga, Susan Pollard-Walker, Regina Schells

NUWAIX-11 Technical Scenario Development and Production

The team designed, developed, and finalized concepts, visual aids, and hardware to support a national-level interagency Nuclear Weapon Accident/Incident exercise in the Jacksonville, Fla., area.

Team members: Sarah Mahoney, Dan Small, Paul Gabaldon, Brenda Townsend, John P. Hoffman, Brad Altman, Hans Oldewage, Karen Pruett, Jeffrey Lynch, Dan Vortolomei, Richard Stump, Harry Cincotta, Juan-Carlos Jakaboski, Brian Schwaner, Mark Bleck, Michael Dvorack, Everett Hafenrichter, Dennis Helmich, Nikki Lobato, Brad Mickelsen, David Minster, Therese Ordonez, Dominic Pohl, John Saylor, Michael Spence, Angelic Sveum

Pyrotechnic Powder Ignition and Performance Engineering & Science Team

An experimental and modeling team, led by Marcia Cooper, developed a kinetics ignition model and corresponding full-scale model for TiH(1.65)/KCI04 to predict performance in components.

Team members: Bill Erikson, Marcia Cooper, Shane Snedigar, Michael l. Hobbs, Michael Oliver

Special Component Product Fabrication Team

The SC team completed the total project build seven months ahead of schedule, producing more than 300 quality parts.

Team members: Bruce Fishel, Larry Moya, Gordon Box, Joe Cruz Garcia, Bob Patton, Rosemae McKillip, Dave Herman, Lou Malizia, Richard Wavrik, William Averill, Patrick Benavidez, Rosalinda Davis, Joseph Garni, Rudolph Jungst, Michael Olbin, Cathy Richey, Daena Richter, Roger Smith, Neil Sorensen, Christina White, James White, Arthur Koenemund

W76-0 Surveillance Lab Test Team

The W76-0 surveillance team completed high-quality testing of 17 units at the Weapon Evaluation Test Laboratory in record time.

Team members: Hugo I. Loya, Aaron Thompson, Peter Smolenski, Thomas Hieb, Jay Hammond, Edilverto Fuentes, Steve Spinhirne, Brandon Hill, Ernest McNabb, Steve Artho, Keith Clements, Larry Kuykendall, Patricia Bonham, Jose Castillo

W76-1 Intent Stronglink Code-Blue Resolution Team

For exceptional leadership, integrity, and technical excellence in aggressively eliminating the Intent Stronglink Code-Blue nuclear safety vulnerability during production while meeting stringent W76-1 Navy deliverables.

Team members: Sharon Winings, Daniel Peterson, Catherine Siefert, Steve Barnhart, Randy J. Harrison, Carl Rhinehart, Jamey Bond, Kevin Campbell, Brent Blankenship, Robert Boney, Johnny Casias Jr., Jeremy Cottle, Jeffrey Dabling, John Debassige, Steven DeBlassie, Kenneth Eras, William Greenwood, Dennis Kuchar, Christopher Landry, Jose Montoya, Scott Slezak, Sara Linn Szarka, Talmage Thornton

Always/Never Documentary Team

In recognition of the Video Services team's historical documentary film entitled Always/Never: The Quest for Safety, Security, and Reliability.

Team members: Dan P. Curry, Robert J. Koss, John A. Lewis, Ronald McIntosh, Marc C. Olona, Robert A. Paulsen Jr., Brent L. Peterson, J. Stephen Rottler, Paul E. Shoemaker, Judy Hubbard, Douglas Lawson, Judy McKinney, Jeff Nelson, George Novotny, Michael David Wood, Bob Bradley

Pension and Life Administration Team

This team administers pension and life insurance benefits for Sandians/retirees. Despite a significant reduction in team members, more than 200 retirements were processed in December 2010.

Team members: Cara Waymire, Barbara Roberts, Cheryl Frey, Sandra Smallwood, Marlene Vigil, Jane Marbach

Securing and Delivering Talent to the Labs

In recognition for outstanding 'extra-mile' effort in achieving Sandia's hiring goals in support of Sandia's mission goals - Org. 3554 Staffing, Staff Augmentation, Relocation, and Represented Hiring.

Team members: Charles Mahares, Darleine Barboa, Cindy Burnett, Sherri Clark, Kim Goodrich, Marlene Johnson, Michael Kline, Anna Martens, Lori Messex, Marcella Ortiz, Sharon Ortiz, Drew Parsons, Brandy Reyes, Michelle Rodriguez, Kimberly Ross, Elizabeth Ruiz, Amy Stacks, Colin Scoggins, Geraldine Lovato, Janine Mitchell, Monica Hidalgo, Pamela Firneno, Patrice Armstrong, Rene Newton, Teresa Paques

Building 890 Main Switchboard Replacement Team

The team members stepped in to successfully complete the replacement of the main switchboards in Bldg. 890 after receiving the assignment on very short notice.

Team members: Carlos Molinar, Eugene M. Wade, Shawn Baca, Paul Delara, Ron Hoskie, Harlan Harrington, Charlie Costales, Herman Gomez, Preciliano (Press) Narvaiz, Vince Urvanejo, Steve F. Goodrich, Philip Pelzman, Jim Chantler, Carlos Giron, Gary Bultmann, Charles Cerutti, Jerry Wayne Crow, Jose Delgado, Tia Duplentis, David Florez, Michael Lucero, Ceasar Maestas, Charles Myers, David Olguin, Matthew Puariea, Louis Steven Sanchez, Harold Wade

Fly Away Laboratory (FAL) Team

A Fly Away Laboratory was developed to allow rapid deployment of precision laboratory equipment that quantifies/identifies radioisotopes up to four days faster than traditional methods.

Team members: Joseph Zigmond, Brenda Maes, Ken Sansone, Nina Poppelsdorf, Nicole Zayas, Karen Schoendaller, Rose Preston, Sonoya Shanks, Shawn Colborg, Robert P. Reese, John P. Kilbane, Luis Valdivia, Sean D. Fournier, Denise Fleming, John R. McCulloch, Arthur Shanks, Cindy Conrado, Mark Johnson, Carolyn Wong

Ion Beam Laboratory Facilities Project Team

The Ion Beam Laboratory Facilities Project Team executed a $40 million line item project ahead of schedule, under budget, and with no lost work days.

Team members: Brandi Yearout, Julie V. Cordero, Carlos Giron, Jenny Dubbs, Michael L. Smith, Tim Peterson, John Norwalk, Charlie Tomlin, Nick Durand, Gibert Aldaz, Bill Fleming, Art Logan-Condon, Ricky Pope, David Hofmann, Mateo Aragon, Patrick Thomas, Marti Adams, Matthew Brito, Laura Draelos, Greg Kirsch, Sammy Lopez, Ronald Rymarz, James Corcoran, William Johns

IPOC Emergency Reference Guide Committee

This team effort personifies the motto "Working safely, securely and mindfully," demonstrating that safety is everyone's business.

Team members: Kristin Klossner, Caren Garcia, Lita Suina, Claudia Childress, Liz Encinias, Eugene McPeek, Shennay Ochoa, Kathryn Ely

Renewable PV GEM Cart Team

In recognition of the need to create a more energy-efficient campus, this cross-functional team developed, constructed, and tested an experimental solar powered cart.

Team members: Erika Barraza, Matthew Brito, Diana Goold, Israel L. Martinez, Rick J. Otero, Darcy Fischer

Safeguards and Security Facility Clearance Program Team

This team improved the overall health of the Facility Clearance Program and institutionalized processes and procedures to ensure an effective, efficient and sustainable program.

Team members: Paulette Solis, Linda Schardt, Melanie Heyborne, Jocelyn H. De Luche, John Bustamante, Mary E. Chavez, Jessica C. Pacheco, Kelly Snow

Sandia Corporate Fitness Facility Team

The Fitness Facility, located in Bldg. 956, was transformed into a corporate, commercial-like fitness operation that enables the health and well-being of Sandia's workforce.

Team members: Frank Maestas, Renee Allred, Erica Lopez-Hamby, Anthony G. Chavez, Tim Harrington, Jason D. Morris, Bill Lucy, Pablo Montoya, Michael J. Gutierrez, Brian John Bielecki, Timothy Buckler, Renee Holland, Michael Schaller, Lisa Teves, Kayleen Vahle, Amy Cincotta, Heather Morgan, Jon Pier

Site-Wide Environmental Impact Statement (SWEIS) Source Document Team

The team successfully delivered a set of documents to assist in the preparation of SNL/NM SWEIS. The outstanding performance was recognized by the SSO manager.

Team members: Gina Deola, Stacy Griffith, Craig Wood, Stephanie Salinas, Amy Blumberg, Patricia Dworzak, Linda S. Bayliss, Brenda Bailey White, Arnika Chidambaram, Penny Avery, Franz Lauffer, Christopher S. Catechis, Michael Nagy, Rebecca Ullrich, Anita Reiser, Kelsey Curran, Joanna Eckstein, Kristina Sullivan, Katrina Wagner, Chip Roma, Mark L. Miller, Adrian Jones, Joseph Bonaguidi, Ross Dimmick, Dennis Peek, Michael L. Du Mond, Bob Richards, Bob Brandhuber, Donald Helfrich, John Teel

Toluene Investigation/Evaluation Team

The team conducted a thorough technical investigation to explain the presence of toluene detected under the Mixed Waste Landfill, avoiding the need for further expensive fieldwork.

Team members: Mark Minteer, Alicia Aragon, Tim Jackson, Pamela Puissant, Mike Mitchell, Brenda Langkopf

(Continued on next page)


Thomas Sanchez
2993


Judith Spomer
9515


Bryn Barbara Stuart
110


Mary Ann Sweeney
1610


Anthony Tanbakuchi
5712


Eric Thomas
8965


Joanne Trujillo
4233


Margaret Vanderheiden
5098


Karla Weaver
1911


Kimberly Welch
6133


Ryan Whalen
6821


Bobbie Williams
2718

(Continued from preceding page)

ACES Team

The team is recognized for the design, modeling, production, lab and field test, and delivery of the extremely complex, robust, versatile ACES radar system.

Team members: Margaret S. Murray, Michael Pedroncelli, Martin Thompson, April Sweet, Dan Sprauer, Sam Bensonhaver, Jeffrey Bach, Gil Delaplain, Michael Gardner, Donald Small, Tim Bielek, Philip Kahle, John Matthews, Jeff Hollowell, Bobby Rush, Scott Devonshire, Dale Dubbert, Peter Dudley, Susanne Gabaldon, Michael Holzrichter, Richard Hurley, Jason Lechtenberg, Joe Lucero, Judd Rohwer, Sonja Tideman

AHW Hypersonic Glide Body Actuator Control System Development Team

This team is recognized for outstanding teamwork leading to a quality outcome in the design, implementation, and test of the HGB Actuator Control System for the AHW Program.

Team members: Shane Migliore and David Kozlowski

Cable Anomaly Resolution Team

The Cable Anomaly Resolution team solved a complex system-level interface issue, and along the way improved the way flight cables are tested, inspected and integrated.

Team members: Anthony Perlinski, Michelle Griffith, Mike Tritt, Siv Limary, Erik Fosshage, Bob Crain, Nicholas Teske, Jose Luis Rodriguez, Arden Anderson, Pavel Chaplya, David Godsey, Jeffery Green, Gordon Grimm, David Ho, Paul Hooper, Randolph Kay, Riley Kilgo, Andrea Lewis, Mathew Napier, Eric Shields, Rebecca Elizabeth Stewart, Gregory Ten Eyck, Gary Whitlow, John Williams, Lori Ann Ziegler, Phil Blower, Joe Lyle

Copperhead Model 2 Development Team

The Copperhead Model 2 Development Team designed, produced and delivered a radar for small Unmanned Aerial Vehicles that provides truly unique capabilities for America's national security.

Team members: Bryan L. Burns, Kathie Woods, Jennifer L. London, Ann Marie Raynal, John Fuller, Clint Furrer, Emmett Gurule, Douglas G. Thompson, Philip Kahle, Roger A. Ten Clay, Donald Small, Michael Pedroncelli, Henry Coakley, Marc Ahlen, Steven Allen, Tad Ashlock, Denise Borrego, Karen Coperich Branch, Robert Bugos, Dale Dubbert, Daniel Fellig, Lee Marshall, Sharlene McLane, James Redel, Nicholas Lopez

Cyber Talent Development Team

This team is recognized for exceptional teamwork, strategy, and results to improve both the efficiency and effectiveness of competency development, recruiting, hiring, and on-boarding to support growing Sandia cyber programs.

Team members: Alyssa Christy, Carrie J. Ryan, Kathy Robertson, Aubrey Edge, Ben Cook, Michael Kline, Cherri Porter, Glory Emmanuel, Matthew Areno, William Atkins, Cindy Burnett, Tara Renee Camacho-Lopez, Lozanne Chavez, David Cunnington, David Duggan, Brian Gaines, David Gallegos, Hannah Louise Gillis, Katheryn Hanselmann, Linda Jaramillo-Alfaro, Stephen Jones, Carry Jung, Michelle Leger, Neeta Rattan, Cindi Reyes, Laura Scott, Karen Shanklin, Andrea Mae Walker, Daniel Thompson, Jessica Hobbs, Johanna Hartenberger, Dale Kruzic, Monica Eshner, Judith Preston

FTG-06A Countermeasures Team

The FTG-06A team was able to overcome difficult technical and schedule challenges to deliver successful products on time and under cost.

Team members: Eric Stabb, Sharon Shannon, Steven Anderson, Jorge A. Delgado, Charles Eberle, Clarence Sanchez, Dan Urenda, David J. Muron, Bill Bonahoom, Al Brown, Owen Henderson, Charles L. Myers, Matthew Reading, Joseph Perry, Clinton Landrón, Gary Ashcraft, Lisa Kennicott, Timothy Landstra, Roman Martinez, Daniel Peacock, Adam Peters, Linda Rosario

HiFES Processor Electronics Box Module Swap Team

For exceptional performance in the execution of the HiFES Processor Electronics Box module swap effort.

Team members: Mary Anne Tidwell, John McClendon, Sara Sokolowski, Mellisa Heller, Mark Dowdican, John Fellows, Irene Bentz, Wesley J. Landaker, Mike Swanson, Glen Magee, Steve Dropinski, Woody Woodstra, Kevin Schmidt, Rick Glaspy, Arden Anderson, Derek Anderson, Tammy Eldred, Todd Embree, Leslie Juarez, Deborah La Pierre, Robert Long, Robert Mills, Mathew Napier, Kathleen Olsberg, Michael Pacheco

KARNAC Team

For demonstrating the art of the possible in how the nation can execute its Space Situational Awareness mission.

Team members: Ruby Chavez, Ellan Anderson, Bryan Olivas, Vanessa Martell, Elaine Martinez, Lois Lauer, David D. Cox, J. Flemming, Mark Bastian, David Stuart, Casey Cowart, Jamie Coram, Benjamin Currier, Steven Gianoulakis, William Proctor, William Richardson, Lynn Wilson

M2 Team

This team is recognized for professional service to the war-fighter in support of a fielded system and development of new waveforms, a new REA payload, and highly capable TFUs.

Team members: Bert Tise, Dave Werling, Ruby Pai, Thomas Gaffney, Chris Nail, Stephanie Otts, Von Trullinger, Joel Darnold, Eric Varley, Jeff Thomson, Matthew Montaño, Adam Umpleby, Brian McMurtrey, Philip Ortiz, Jason Payne, Leonard Dixon, Susanne Gabaldon, Cory Ottesen, Sabrina Sanchez, Jeffrey Spooner

NAP Ground System Information Assurance Team

For going above and beyond obtaining the NAP Ground System (NAPGS) DoD Information Assurance Certification and Accreditation Process (DIACAP) Interim Authority to Test (IATT) accreditation.

Team members: Nancy Marsh, Charlene Arias, Suzanna Bemis, Jean Pena, Michael F. Prins, Charles Keller, Arthur Bazán, John Ball, Dan Omick, Rik Holman, Eddie Baker, Louann Grady, Terry Jaramillo, David Kiffer, Jeffrey Kluck, Ivan Lizarraga, Darrell Thomas, Christopher Waller, Trudi Martinez, Steve Ochoa, Stephanie Phillips, Stephanie Sanchez

NEA Pillar 1

The Nuclear Enterprise Assurance Pillar 1 pilot project demonstrated advanced techniques on the counterintelligence aspects of evolving threats to the nuclear security enterprise.

Team members: Gina Sada Rightley, Anna Nichols, Michael Rightley, Bryan Ingram, Rush Inlow, Michael J. Collins, Travis Bauer, Deborah Belasich, Richard Colbaugh, Justin Doak, Anthony Giunta, Bruce Hendrickson, Curtis Johnson, Steven Kempka, Gary Laughlin, Sandra Mied, Martin Murphy, Cynthia Phillips, David Robinson, Daniel Summers, Laura Swiler, William Tedeschi, Brian Wright, David Zage, Kristin Glass

Nexus Mission Assurance Team

This team is recognized for outstanding Mission Assurance commitment and achievement in the areas of programmatics, quality, contamination, configuration management, and documentation.

Team members: Elsa Bumstead, Amy Williamson, Michael Meade, Kim Archuleta, Elizabeth Schexnayder, David A. Barringer, Ron Maes, Dennis Nelson, Jeff Argo, Carlos Esparza, Walter English, George Greer, Dave Perry, Geraldine E. St. Clair, Franklin F. Johnson, Alina Ferguson, David Epp, Rick Glaspy, Charley Hill, Colin McConnell, Marlo Maxson, Kathy Lane, Arnold Puentes, Tristan Thompson, Lynna Esquibel, Souvanny Kuthakun, Joanna Lewis, Siviengxay Limary, Kenneth Liotta, Dominic Martinez, Tina Papenguth, Larry Ritter, Denise Tibbets, William Wilbanks, Melissa Ann Yaklin

Project Lorelei

Project Lorelei provided the nation with a new and highly significant capability for accomplishing national security missions.

Team members: Cynthia l. Nelson, Andrea Walker, Anna Lujan, Emily Mitchell, Brian Mileshosky, Jason Gale, Riley Kilgo, Joe Quinby, Mark Torgerson, Jeffrey Bach, Christopher J. Biazak, Jared Dove, J. Joseph Clement, John Nevers, John Browning, Edward Cole Jr., Richard Schroeppel, Norman Smith

Project W Execution Team

The Project W CAT Team executed an automated counterintelligence analysis project addressing a significant and timely national security issue. The results benefitted three government agencies.

Team members: Michael Trahan, Alicia Anastasio, Travis Bauer, Timothy Drummond, Mark Foehse, Gerald Hendrickson, Ann Laney Smith, Kamilla Schwing, Jason Shepherd, Andrew Wilson, Thomas Otahal

SeaShell Team

This team is recognized for unparalleled technical innovation, exceeding customer expectations, exceptional teamwork, and dedication to the project.

Team members: Jennifer Trasti, Andrea Walker, Tiffany Pierce, Leanne Felix, Phil Callow, Emily Mitchell, J. Joseph Clement, Jeffry Sniegowski, Samuel Green, Jared Crace, Brent Kucera, William Cordwell, Mark Torgerson, Adam Flynn, Max Guise, Kyle McDowell

The SALSA3D Development Team

This team is recognized for developing a three-dimensional compression wave velocity model of the entire Earth for the purpose of more accurately locating underground explosions through seismic monitoring.

Team members: Mark Gonzales, Jim Hipp, Marcus Chang, Charlotte Rowe, Benjamin Lawry, Sandy Ballard, W. Scott Phillips, Michael L. Begnaud, Chris Young, Andre Encarnacao, Dale Anderson

Wheel of Time Team

The Wheel of Time team developed a new capability that is not only important for the future, but also extended the life of several end-of-life products.

Team members: Vincent Urias, Antony Saba, Danny Loffredo, Matthew Areno

Business Support Team for Closeout of the Yucca Mountain Project

The Yucca Mountain Project closeout represented complexity and high risk, yet was completed on time, within budget resulting in no liabilities for SNL or SSO.

Team members: Angie Dyke, Leann Mays, Phillip Cox, Cynthia Huber, Janette Lloyd, Patrice Sanchez, Delene Cox, Jeffrey Harkins, Anthony Fasulo, Jean Ann Plummer, Tami Gerdin, Gordon Appel, Mary Louise Quintana

DeepWater Horizon Response Support Team

This team is recognized for exceptional service rendered in responding to the DeepWater Horizon accident and shutting down the flow of oil into the Gulf of Mexico.

Team members: Barbara Lucero, Stewart Griffiths, W. (Rusty) Escapule, Margie Tatro, David Borns, Susan Kitsch, Roger Hartman, Amy D. Bowen, Annie Chavez, Munaf S. Aamir, Jean Ann Plummer, Ronald Dykhuizen, Doug Blankenship, Tom Hunter, Jim Redmond, Sheldon Tieszen, Thomas Bickel, Shannon Guess, Kenneth Gwinn, Charles Morrow, Charles Oien, Arthur Ratzel, Kyle Thompson, Michael Valley, Nancy Nicolary

Gas Migration Study Team for Bureau of Land Management, New Mexico

An innovative application of risk assessment to co-located resource development and new testing leads, two of New Mexico's most valuable industries, to significant progress.

Team members: David Borns, Kathy Gaither, Allan Sattler, Tom Pfeifle, Rob Rechard, Teklu Hadgu, Steve Sobolik, Steven Knudsen, Carolyn Kirby

Gemini-Scout Mine Rescue Robot

The Gemini-Scout mine rescue robot was created to assist in the development of a concept of operations (CONOPS) for underground mine rescue missions.

Team members: Clint Hobart, Daniel C de Baca, Dennis Wilder, Jon R. Salton, Justin Garretson

Global Threat Reduction Initiative Domestic Program Team

The domestic team successfully implemented voluntary security enhancements at 82 buildings across the U.S., creating a new model for radiological and nuclear material security.

Team members: Marla Jeanette Clary, Ashley Wentz, Jose Benjamin Salazar, Laura Lovato, Mark Baumann, Robert Salazar, Kathleen Caroline Larese, James Burt, Karla Simoes, Annie Hennie, Roman Rimbert, Michelle Stevens, Norman Anderson, Yvonne Baros, Scott Brooks, Beth Dick, Tevin Gray, Penne Griffin, Douglas Otts, John Pelletier, Martin Sandoval, Melony Hildebrandt, Michael Williams, Steve Porter, John Whittenburg

High Security Door Confirmation Panel Test

The HSD team executed a series of aggressive tests resulting in an analysis and subsequent test report deliverable to the customer.

Team members: Art Archibeque, Orlando M. Lucero Jr., Leroy Jinzo, Deven Codding, Darren Pendley, Jose Molina, W. Gary Rivera, Richard T. Ivey, Sarah Buttram, Donald McManaway, Jeremy Banks, Paul C. Codding, Timothy Brown, Kevin Jameson, Rick Hartzell, Mel Crow, Pasqual Vallejos, Michael J. Fleigle, Jeff Chavez, Luis Abeyta, Edward Bystrom, Byron Demosthenous, Billy Marshall Jr., Rendey Colgrove, Dave Green, Andrew Sanchez, Tim Reynolds

Interagency Biological Restoration Demonstration (IBRD) Project Team

The IBRD team completed a multiyear (four-year) analysis of wide-area, urban biological attacks and produced formal guidance, technologies, and revised national policies for improved restoration.

Team members: Wayne Einfeld, Ashley Allen, Rita Betty, John Brockmann, Donna Edwards, David Franco, Julia Fruetel, Zach Heath, Robert Knowlton, Paula Krauter, Daniel Lucero, Karim Magdi Mahrous, Andrew Rothfuss, Timothy Sa, Mark Tucker, Mollye Wilson, Lynn Yang, Anthony Intrepido, Brad Melton, Brandon Servantes, Kim Grommes, Matthew Tezak, Raymond Boucher, Andres Sanchez

XTK (X-ray Tool Kit) Team

The XTK team has developed a new software tool that is providing better image analysis and detection for nuclear counterterrorism operations.

Team members: Thomas Gladwell, Wendy Amai, Brandon Cover, Justin Garretson, Michael Heister, Clinton Hobart, Darren Pendley, Andrew Sanchez, Sarah Buttram, Tim Reynolds, Pasqual Vallejos

Advanced Mobile Atmospheric Measurement Laboratory Team

For establishing Sandia's leadership role in the greenhouse gas measurement community through rapid development and deployment of groundbreaking capabilities for climate science and treaty verification.

Team members: Mark D. Ivey, Fred Helsel, Bernie Zak, Hope Michelsen, Ray Bambha, Paul Schrader

Hydrogen Tank Cycle-Life Research Team

For exceptional ingenuity and principled research in hydrogen technology under high-visibility program pressure and while meeting compressed deadlines.

Team members: LeRoy Whinnery, Chris San Marchi, Henry Korellis, Cindy Alvine, Mark Zimmerman, Peter Van Blarigan, Brian Somerday, Dave Zanini

IMMS NLE10 Team

In recognition for meeting or exceeding cost, schedule, and deliverable requirements in the design and piloting of the SUMMIT system in support of National Level Exercise 2010.

Team members: Zach Heath, Lynn Yang, Andrew Rothfuss, Trisha Hoette, Stephen Mueller, Ann Yoshimura, Todd Plantenga, Katherine Guzman, Marilyn Hawley, Karim Mahrous, Christine Yang, Ernest Friedman-Hill, Carmen Pancerella, Tim Sa, Daniel Sinto, William Tedeschi, David Weaver

Integrated Lifecycle Security (ILS) Team

For developing methods and tools to assess system-level nuclear weapon security risk, and for providing sound security improvement recommendations to our national leaders.

Team members: Michael L. Foley, John P. Hinton, Marian C. Jackson, Liston Ketith Purvis, William S. Rorke Jr., William J. Tedeschi, Fredrick G. Trussell, Carla Ulibarri, Gregory D. Wyss

NW Recruiting, Hiring, On-boarding, and New Hire Success Program

For achieving extraordinary results in designing and executing the highly successful Division 8000 NW engineering recruiting, hiring, on-boarding, and New Hire Success Program.

Team members: John Garcia, Bev Kelley, Wayne Schock, Kristy Sibert, Tara Hartley, Nipun Bhutani, Debra Post, Howard Royer, Diana Pereira, Paul Yoon

Enterprise Hardware and Database High-Availability Implementation Team

For outstanding technical services related to the aggressive migration of SQLServer database hardware/software/OS to a highly available failover cluster on new chassis/blade infrastructure.

Team members: Ray S. Garcia, David G. Schoch, Michael Seyl, Mike Mink, Ross Uhrich, Bernadette Edge, Bob D'Spain

High Performance Computing (HPC) OneStop

For operational excellence in transforming a number of technical support functions for scientific/engineering computing into a OneStop service for high-quality user support.

Team members: Stephen Zenker, Eric D. Glaser, Ken Keahbone, Terese Johnson, Lisa Ice, John Noe, Steve Stephens, Glenn Amspaugh, Susann Nutter, John Greenfield, David Karelitz, Chadwick Johnson, Dayne Myers, Constantine "Dino" Pavlakos, Charles Snider, Joel Stevenson, Joel D. Miller, Robert Balance, Cynthia Caton, Laura Charles, Sophia Corwell, Heather Gilliland, Russell Goebel, Karen Haskell, Mark Judy, Susan Mcree, Judith Sturtevant, Regina Valenzuela, Sandra Warner

iPad Pilot Team

This team is recognized for completion of the Phase I iPad Pilot, delivering solutions to numerous business and technical issues by applying a multidiscipline and cross-organizational approach.

Team members: Janice Vaughan, Marc Miller, Sebastian Rael, Irene Allen, Judy Chavez, Gary Simon, Robbie Evanoff, Ian F. Bell, Richard Pinsonneault, Jerry Bruce, Eric Thulin, Jeff Miller, Susann Nutter, Kenneth Bernier, Robert Cahoon, Kevin Fahey, Richard Gay, Jeffrey Heller, Barry Hess, Marcia Jacobs, Michele Kahn, Reuben Paul Keller, Joseph Lewis, Mark Mitchell, Danielle Pollock, James Romero, Matthew Snitchler, Timothy Toole, Dean Williams

Workload Characterization (WC) Team

The Workload Characterization team developed and deployed the next major release of tri-lab WC Tool, enabling consistent HPC reporting to tri-lab and NNSA/HQ executive management.

Team members: Carol Alvin, Judy Sturtevant, Benjamin J. Anello, Russell Goebel, Joel Stevenson, Heather Gilliland, Jerry Smith, Chadwick Johnson, Charles Snider, Denise Eatherly, Kerri Nichols, Cindy Martin, Sean Naegle

Out with the Old (ETK); and In with the New! aka: PeopleSoft 9.0 Time & Labor Implementation

For remarkable creativity and selfless time commitment, working through the night to achieve our optimistic "go-live" date of PeopleSoft Time & Labor.

Team members: Daniel Berry, Donna M. Kao, Barbara Sandoval

Benefits Technical Evaluation Team

This team worked throughout the fiscal year to create and procure the benefits package for all Sandians in 2011.

Team members: Deborah J. Nuñez, Dolores Gonzales-Limon, Yolanda Miller, Linda Duffy, Lisa Ramos

Business Community New Hire Program Team

The BCNHP team made an exceptional contribution through designing and implementing a program to improve the experience and increase the impact of new business hires.

Team members: Tricia Sena, Shannon McConkey, Krista Smith, Jessica Medina, Lynne Adams, Amy Matteucci, Elizabeth Roll, Kara Lynne Smith

Governance and Oversight Reform Team

The Governance and Oversight Reform team is a cross-functional team that catalyzed the maturation of the Sandia/NNSA relationship to one based on trust and transparency.

Team members: Reneé Escamilla, Anna Gibson, Sharon Marshall, Kristin Flores, Chuck Meyers, Aaron Hamburger, David Goldheim, James Eanes, T. J. Allard

New DoD/DOE WFO Requirements Implementation Team

For outstanding teaming, planning, and implementation of DoD/DOE Work for Others requirements.

Team members: Deborah Payne, Nancy Nesbitt, Laura Owens, John Brewer, Donna Smith, Veronica Argo, Mary Cocco, Michael Maurer, Sheila O'Neill, Evelyn Serna

The Work for Others Period of Performance Validation Team

The team automated the ability to check, on a real time basis, whether WFO projects and tasks have a valid agreement prior to processing charges.

Team members: Adrian Sanchez, Tom Beller, Sheila A. O'Neill, Mark Gonzales, James Hilts

Litigation Team

The Litigation Team is recognized for outstanding support in the favorable resolution of several matters.

Team members: Martha Trujillo, Karen A. Baca, Amy Blumberg, Jeana Brosseau, Barbara Glasco, Cindy Lovato-Farmer, Joyce A. Lesperance, Corey Reitz, Justin Poore, Kevin Bieg, Sylvia Walter, Marianne Hill, June Drayer, Patricia Sanchez, Peter Warner

2012 Truman Fellows bring exciting research to Sandia

By Bill Murphy

President Harry S. Truman Fellowship
in National Security Science and Engineering

Researchers Kevin Carlberg and Matt Eichenfield have been selected as Sandia's 2012 Truman Fellows. They join the ranks of 14 other researchers who have been appointed since the President Harry S. Truman Fellowship in National Security Science and Engineering was established in 2004. Because the fellowships are three-year assignments, six Truman Fellows are still doing research at Sandia. Additionally, seven other Truman Fellows subsequently joined the Labs' technical staff upon completion of their fellowship assignments, four of whom are still researchers at Sandia.

Matt, who earned his doctorate in physics from Caltech in 2009, has already reported to Sandia, where he is working in Radiation Hard CMOS Technology Development Dept. 1748 under manager and mentor Rich Dondero. Kevin, who earned his doctorate in aeronautics and astronautics at Stanford in June, is slated to report in October to Quantitative Modeling and Analysis Dept. 8954 under manager Jerry McNeish. His mentor will be Paul Boggs.

Sandia Chief Technology Officer and Div. 1000 VP Steve Rottler says he couldn't be more pleased with this year's appointments.

"Again this year," Steve says, "Sandia received outstanding research proposals from numerous individuals vying for the prestigious Truman Fellowship. After extensive review by the Truman selection committee, two individuals rose to the top. We look forward to great results from the game-changing research being proposed by Matt and Kevin. We are confident that their research will help us advance our mission work in areas of fundamental importance to us, as well as contribute new scientific knowledge to the world community."

Game-changing and high-risk/ high-reward research

Kevin earned a bachelor of science degree in mechanical engineering from Washington University in St. Louis and a master's degree in aeronautics and astronautics from Stanford. He is the author of numerous published papers and invited talks and is the recipient of many awards, honors, grants, and fellowships. Kevin titled his Truman research proposal "Breaking Computational Barriers: Real-time analysis and optimization with large-scale nonlinear models via model reduction."

Kevin's research at Sandia will focus on methods, both practical and theoretical, for understanding and exploiting the structure of complex physics and engineering problems to dramatically reduce the computational time required to solve extremely large problems.

The selection committee called Kevin's work potentially "game-changing," bringing the ability to do, on desktop machines, the sort of high-fidelity modeling that currently lives only in the realm of high-performance computing.

Matt earned his undergraduate degree in physics from University of Nevada-Las Vegas, and a master's degree, also in physics, from Caltech. He is the recipient of multiple honors and awards and the author of numerous papers and invited talks. He is also a registered US patent agent who has participated in the prosecution of more than 50 US patents as either sole practitioner or assistant counsel. His Truman research proposal is titled "Applications of Microwave Frequency Nano-Optomechanical Systems: Oscillators, Circuits, and Sensors."

Matt's work at the Labs deals with optical mechanics (OM), the interaction of light and vibration with mechanical structures. At Sandia, Matt plans to use nano-OM systems to create novel, chip-scale devices that combine photons, phonons, and electrons as the carriers of energy and information.

Matt's proposed work, the selection committee said, "is innovative, high risk/high reward research. If successful, the outcome will be additional major advances for Matt and Sandia in OM and an enabler for expanding work in related mission areas."

The *Lab News* recently asked Kevin and Matt to describe the work they intend to pursue at Sandia. Here's what they had to say:

Kevin Carlberg — "Over the past two decades, computer simulations of physical phenomena have become indispensable tools in science and engineering. Due to the development of high-fidelity computer models, efficient solution algorithms, and supercomputers, analysts now use simulations to better understand complicated engineering systems, reduce design costs, and enhance reliability. Despite these advances, a complex system such as the power grid requires a detailed computer model that can take weeks or months to simulate, even on supercomputers with thousands of processors. This renders computer simulations impractical for many time-critical applications. For example, designing nanoporous materials for gas storage affords only a few hours for each simulation; actively controlling the power grid demands near-real-time simulation.

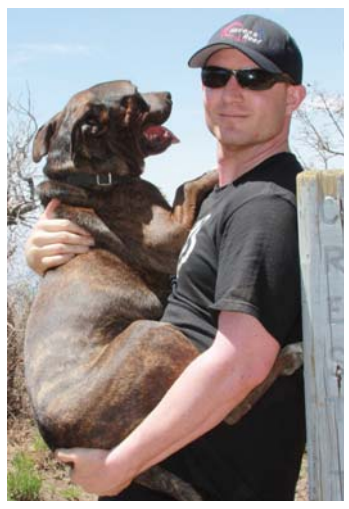
KEVIN CARLBERG

"At Sandia, I aim to contribute to breaking this barrier separating high-fidelity computer simulation from time-critical applications. To do so, I will develop a 'reduced-order modeling' methodology that reduces the complexity of high-fidelity computer models while preserving their essential features. Although such approaches have been successfully applied to simple systems, their effectiveness on complex, nonlinear, real-world systems such as the power grid remains an open question. I plan to devise a technique for these systems by investigating ways to decrease the model's complexity in both space and time — as well as the number of computing processors required for the simulation — while satisfying mathematical properties related to optimality, consistency, and stability.

"Sandia is the ideal place to conduct this research due to its world-class computing resources, extensive experience with large-scale simulations, and expertise in real-world applications that will benefit from this research. The Truman Fellowship is a once-in-a-lifetime opportunity and provides an excellent setting to launch my scientific career, as it enables me to work as a principal investigator on problems of national interest under the mentorship of some of the country's best scientists."

* * *

Matt Eichenfield — "Anyone who has ever watched their child kicking in the womb or had a kidney stone shaken apart instead of having it surgically removed has a healthy appreciation of the power of acoustic ultrasound. But what if we could make analogous movies of DNA being transcribed inside a living cell or shake apart the head of a virus? Recent advances in nanotechnology may indeed make these things possible.



MATT EICHENFIELD (and Charlie, "the best dog ever," says Matt).

"Modern acoustic ultrasound is produced by the vibrations of microscopic devices, fabricated on the surface of a microchip. These oscillators, which have dimensions best-measured in microns (1 micron = 1 millionth of a meter), are like microscopic bells that can be rung by applying an oscillating voltage. To produce strong ultrasound waves, many MEMS devices are fabricated on a single chip in a large array, allowing many identical oscillators to add up the power of their sound waves and produce a much larger signal.

"As part of my doctoral and postdoctoral work at Caltech, I demonstrated an analogous on-chip, scalable platform for controlling the vibrations of even smaller mechanical oscillators — with dimensions best measured in nanometers. Called nanoscale optomechanical systems (NOMS), these devices allow extremely efficient generation and detection of microwave-frequency sound waves using light to 'ring the bells' instead of voltages. The efficiencies are high enough that NOMS may be able to overcome previous technological challenges associated with ultrasound in the gigahertz regime.

"Since sound waves in this regime can be as small as 0.1 of a micron, and typical living cells are between 10 and 100 microns, the sound waves NOMS produce should be capable of imaging the structures inside a cell. Furthermore, like an opera singer shattering a wine glass with her voice, current ultrasound technologies are used to noninvasively destroy kidney stones by shaking them apart; the gigahertz-frequency ultrasonics possible with NOMS could be used to selectively destroy the heads of viruses or maybe even cancerous cells.

"Sandia is an ideal place to pursue the development of NOMS-based ultrasound. The MESA facilities give me access to some of the world's most advanced fabrication facilities, and leading innovators in MEMS and NEMS [micro- and nanoelectromechanical systems] work just down the hall. Moreover, the Harry S. Truman Fellowship allows me the freedom and resources to use the facilities and the expertise of Sandia's scientists and engineers to their full extent."

The Truman Fellowships are three-year appointments. Candidates are expected to have solved a major scientific or engineering problem in their thesis work or have provided a new approach or insight to a major problem, as evidenced by a recognized impact in their field.

"Over the past seven years," says Sandia Chief Technology Officer and Div. 1000 VP Steve Rottler, "the Truman Fellowship Program has provided Sandia with some of the best young science and engineering talent that is available. Because Truman Fellows can work in any area of research or engineering in which Sandia is involved, the breadth of the Truman Fellows' projects is very large — spanning information technologies and computer science to laser physics."

The Truman Fellowship program fosters creativity and stimulates exploration of forefront science and technology and high-risk, potentially high-value R&D. A panel of eight senior scientists and engineers reviews and ranks each application and interviews finalists. This year's panelists were: Pat V. Brady (6910), chairman, Dave Chandler (8300), Joe Michael (1822), Cynthia Phillips (1465), Philip Kegelmeyer (8900), Ed Cole (1726), Tan Thai (5630), and Dennis Roach (6620).

Sandia's University Research Office (1911) and Human Resources (3554 and 3555) teamed up more than seven years ago to create the Truman Fellowship Program and develop the processes necessary to implement the prestigious position.

Previous Truman Fellowship recipients include: Youssef Marzouk, Gregory Nielson, Ilke Arslan, David Scrymgeour, Jacques Loui, Whitney Colella, Anatole von Lilienfeld, Darin Desilets, Bryan Kaehr, Patrick Hopkins, Anne Ruffing, Chris Weinberger, Carlee Ashley, and William Chueh.

2011 KAFB Education Center open house is set for Aug. 3

The Kirtland Education Center invites members of the Sandia workforce to attend its 14th annual open house Wednesday, Aug. 3, 11 a.m.-2 p.m. at the Kirtland Air Force Base Education Center (1900 Wyoming Blvd. SE, Bldg. 20602).

Last year, more than 300 people participated in the event and that many or more attendees are expected this year. Approximately 40 schools and organizations will be present at the open house this year to answer questions about college programs.

Information will also be available on distance learning, the GI Bill, financial aid, Troops to Teachers, and other important educational issues.

Refreshments will be served in the lobby during the event and door-prize drawings will be held at the end of the day. You do not need to be present to win.

Direct questions to Linda Campbell at 846-1730 or linda.campbell@kirtland.af.mil or the KAFB Education Center at 846-8955 or 846-9933.