High-quality white light produced by four-color laser source

Tests show new kid on block – diode lasers – eventually could challenge LED technologies for home and industrial lighting supremacy

By Neal Singer

The human eye is as comfortable with white light generated by diode lasers as with that produced by increasingly popular light-emitting diodes (LEDs), according to the results of tests conceived at Sandia.

Both technologies pass electrical current through material to generate light, but the simpler LED emits lights only through spontaneous emission. Diode lasers bounce light back and forth internally before releasing it.

The finding is important because LEDs — widely accepted as more efficient and harder replacements for century-old tungsten light bulb technology — show drops in efficiency at electrical currents above 0.5 amps. Meanwhile, the output of the sister technology — the diode laser — increases, providing even more light than LEDs at higher amperages.

“What we showed is that diode lasers are a worthy path to pursue for lighting,” says Jeff Tsao (1120), who proposed the comparative experiment. “Before these tests, our research in this direction was stopped before it could get started. The typical response was, ‘Are you kidding? The color rendering quality of white light produced by diode lasers would be terrible.’ So finally it seemed like, to go further, one really had to answer this very basic question first.”

A LIGHT TOUCH — Jeff Tsao examines initial setup used to test diode lasers as an alternative to LED lighting. Skeptics felt laser light would be too harsh to be acceptable. Research by Jeff and his colleagues suggests the skeptics were wrong. (Photo by Randy Montoya)

By Nancy Salem

The thousands of people involved in Sandia’s Nuclear Weapons program faced challenges head-on in FY11 and overcame them, said Jerry McDowell, deputy Labs director and executive VP for national security programs, in a recent Nuclear Weapons Strategic Management Unit (NWSMU) all-hands meeting.

But the challenges, which included controlling costs and designing advanced components, could grow in coming years due to the unprecedented financial pressures the country is facing and the subsequent uncertainty over where the program is headed, he said.

Jerry’s remarks came during a Sept. 29 meeting that focused on FY11 accomplishments and the outlook for FY12, which began Sept. 23.

(Continued on page 4)

Listening to the voice of employees

Deputy Labs Director and Executive VP for Mission Support Kim Sawyer talks about LM Voice survey results, management response

Delivering on a commitment made by Labs Director Paul Hommert last summer, Sandia’s senior management team has been actively engaged in developing responses to feedback from the 2011 LM Voice Employee Survey.

The survey results, while largely positive (see July 1 Lab News), highlighted several issues seen by management as areas for improvement. There were three areas that scored in the 3.0 – 3.5 range, which is considered lukewarm, at best, but certainly not ice-cold. Those areas are career development, performance management, and pay and benefits.

Kim Sawyer, deputy Laboratories director and executive VP for Mission Support, says Sandia management is addressing all three concerns. In addressing them, she adds, Sandia is also advancing its strategic objectives and Kim is especially excited with the objective that states that Sandia “commits to a learning, inclusive, and engaging environment for our people.”

The survey results, says Kim, are not going to end up on a shelf somewhere. “From my perspective,” she says, “it’s all about the employees; it’s making sure we’re listening to them, and that we’re addressing the things that are of concern to them.”

Career development

In the area of career development, there is currently an enterprise-wide initiative for managers to have career development conversations with their employees. In support of that effort, Sandia’s HR professionals have developed a number of resources and tools for managers to facilitate those conversations.

“One of the things I’ve always been clear about,” says Kim, “is that career (Continued on page 4)
That’s that

A couple of issues back, I wrote here about Steve Jobs’ announcement that he was stepping down as Apple CEO. Not long after that issue of the Lab News came out, Jobs passed away, succumbing to pancreatic cancer at the age of 56. Much has been written about Jobs, and understandably so. He was a titan, the first and last of the great titans to emerge at the dawn of the personal computer age. Bill Gates is still around, of course, but he handed off day-to-day operation of Microsoft several years ago, and he is now busy with other interests. Steve Jobs, on the other hand, showed the way to a new kind of business. His genius. My daughter, Kate, nailed it in her own reflection on Jobs’ passing. “People to say products) have inspired so many people to create, as well.” Kate wrote her partially agree. But ‘businessman’ is not enough to describe his impact. I think ‘artist’ is the word I would use. Artist, because he and his creations (I hesitate to ‘businessman’, for totally independent reasons of their own, find themselves in a small town (Wellington is not even half the size of Albuquerque) on the other side of the planet at exactly the same time? But over the years, I’ve often seen these peculiar synchronicities. I could tell you stories about odd coincidences in my own life and I’m sure you all have stories of your own, some of which would strain credulity if they hadn’t happened to you personally.

Sticking with the family theme, my wife and I made a quick weekend trip to Pagosa Springs, Colo., earlier this month. We drove up there to enjoy the fall foliage, only to wake up on a cold Saturday morning to be greeted by a winterscape you’d expect to see in December. This was no fluke; they’re getting a ton of snow up there; Wolf Creek Ski Area opened, astonishingly, on Oct. 7, the first ski area to open this season in the state. As Jim wrote to me in a recent email: “... This is a very strange thing, because I’ve kind of gotten used to the fact that I’m essentially half a world away from anyone who is related to me... Isn’t it odd – it seems so to me – that two cousins, for totally independent reasons of their own, find themselves in a small town (Wellington is not even half the size of Albuquerque) on the other side of the planet at exactly the same time? But over the years, I’ve often seen these peculiar synchronicities. I could tell you stories about odd coincidences in my own life and I’m sure you all have stories of your own, some of which would strain credulity if they hadn’t happened to you personally.

By Stephanie Holinka

Sandia receives award for electronics stewardship

Sandra’s FY10 electronics stewardship activities have received an award for reducing the environmental impacts of the computers, printers, and other office equipment it uses.

The US Environmental Protection Agency (EPA) and the Office of the Federal Environmental Executive, which jointly manage the Federal Electronics Challenge (FEC), gave Sandia a silver award for its progress in life-cycle electronics stewardship (purchasing, operations, and end-of-life management). Sandia was one of four DOE sites recognized at the silver level and was recognized as being substantially complete for FY10.

John Zepper, director of Sandia’s Computing and Network Services Center (9300), accepted the award at a recent meeting in Washington, D.C.

Sandia’s Pollution Prevention program works on electronics stewardship with other Labs organizations, including procurement, computer support, and property management. Sandia’s best practices in electronics stewardship include:

* Purchasing green or silver-certified computers.
* Ninety-five percent of computers purchased by Sandia during FY10 were certified as environmentally responsible through the IEEE Electronic Product Environmental Assessment Tool (EPEAT).
* Eighty-one percent of new computers met the gold standard for environmental responsibility.
* Replacing more than $55,000 worth of excess toner supplies, which otherwise would have been recycled.
* Recycling all used electronic equipment through facilities certified through Responsible Recyclers, or R2, a third-party certification for electronics recyclers aimed at ensuring the responsible management of toxic and nontoxic materials in the recycling process.
* The FY10 environmental stewardship award recognizes for federal facilities and agencies to purchase greener electronics, reduce the impact of electronics during use, and manage used electronics in an environmentally safe way.

Sandia has participated in the FEC since 2006.

Recent Patents

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

* * *

Jin Kim (1742) and Malcolm Carroll (1725), Lateral Conduction Infrared Photodetector. Patent No. 8,022,390.

Heather Pennington (6631), John Brockmann, and Daniel Liebow (both 9300), Powder Dispersion System. Patent No. 8,022,726.

Erik Skogern and Anna Taakes-Pedretti (both 1742): Optical Navigate. Patent No. 8,014,839.

Take Note

An article in the Oct. 7, 2011, issue of Lab News misstated the years during which a Sandia team, working on behalf of the FBI, examined samples of bacillus anthracis contained in letters posted through the US mail. The work, which involved more than 200 samples, was conducted from 2002 through 2008.

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

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By Stephanie Holinka

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That’s that

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Apple, by contrast, was Steve Jobs, to the extent that when he left the company for a period from the mid-1980s to the mid-1990s, it almost collapsed, and came back to life – roaring back to life – only when Jobs returned.

In the obituaries following his death, Jobs was almost universally called a genius. My daughter, Kate, nailed it in her own reflection on Jobs’ passing. “People to say products) have inspired so many people to create, as well.” Kate wrote her partially agree. But ‘businessman’ is not enough to describe his impact. I think ‘artist’ is the word I would use. Artist, because he and his creations (I hesitate to ‘businessman’, for totally independent reasons of their own, find themselves in a small town (Wellington is not even half the size of Albuquerque) on the other side of the planet at exactly the same time?) But over the years, I’ve often seen these peculiar synchronicities. I could tell you stories about odd coincidences in my own life and I’m sure you all have stories of your own, some of which would strain credulity if they hadn’t happened to you personally.

Sticking with the family theme, my wife and I made a quick weekend trip to Pagosa Springs, Colo., earlier this month. We drove up there to enjoy the fall foliage, only to wake up on a cold Saturday morning to be greeted by a winterscape you’d expect to see in December. This was no fluke; they’re getting a ton of snow up there; Wolf Creek Ski Area opened, astonishingly, on Oct. 7, the first ski area in the nation (as one employee proudly told us) to open this year. My wife and I didn’t ski – we weren’t prepared equipment- and clothing-wise – but we drove up to the ski area. It was cool and a bit jarring to see people skiing in early October. Sandia employees, who hope it does so early and come around these places: the New Mexico snowpack could sure use a good recharge this winter. The last thing we need is another fire season like the one we endured in 2011.

See you next time.

— Bill Murphy (505-845-0845, M50165, wtmurphy@sandia.gov)
When the power grid fails, the obvious problem for national security experts is to find out why the blackout occurred. Was it a mechanical failure or was human greed at work? When it comes to things like power grids, computer networks, or a host of other complex adaptive systems that modify their structure to enable success in their environments, complexity science offers ways of approaching problems and new mathematical and scientific methods to reach solutions, says Curtis Johnson (5615).

“The purpose of DATACon is education, collaboration, and inspiration. We wanted researchers to say, ‘Wow! I didn’t know that was going on in the Labs.’” — Warren Davis (1461)

Curtis, a member of a team led by Jeff Tsao (1120) that is studying how complexity science can add value to Sandia’s national security mission, was among more than 30 speakers at the Data Analysts and Topic Authorities Convergence 2011 (DATACon), sponsored by departments 9510 and 1461 and the Hybrid Methods for Cybersecurity Analysis Laboratory Directed Research and Development group.

The two-day series of presentations earlier this month was a grassroots effort to bring together researchers, who are producing vast amounts of data, and data analysts, who have the tools researchers need to make the data meaningful.

“We have many people here at Sandia with a lot of expertise — the mathematicians, engineers, and computer scientists — whom we wanted to bring together with the people who have the need for analytics,” says manager Judy Spomer (9515). “The main goal was collaboration.”

Warren Davis (1461), one of the organizers of DATACon, says researchers also found talks on the wealth of text analysis tools, such as Citrus, presented by Jason Shepherd (1460) and Pan-Tex, presented by Danny Dunlay (1464), particularly interesting.

“Those tools are developed here at Sandia, he says. In his presentation, Curtis provided examples of organized complexity. “The moment you’ve got entities that have the ability to adapt, that need things from each other, or that are in a zero-sum game with each other, you’re going to get complexity.” Curtis said after his talk. “It’s hard to imagine a national security situation that doesn’t involve that on some level.”

The power grid is an example of a complex adaptive system. The grid is a system that no one owns, one person designed it, it changes over time, and there’s no overarching understanding of how it works, Curtis says. Though Sandia and other federal labs have extensively modeled the grid, as it turns out, cascading blackouts also can be caused by human behavior. Utility operators shut down their power supplies because transmission lines are running too hot. The operators want to prevent these lines from wearing out and increasing the overall cost. The shutdowns shift the electrical load to other operators, who do the same, and a cascading blackout results.

“You can give a physical explanation for all the shifts in power and energy, but the simple explanation is that the operator was trying to make a buck and he did the wrong thing,” Curtis says. “You’re going to have to find a way to provide incentives for the power grid operators.”

Complexity science proponents are not asking physicists and engineers simply apply social sciences. Curtis encourages researchers to look at how entities (electrical utility operators in a system the power grid) are adapting to their environments. Their “adaptive signals” can help experts determine what mathematical methods can best solve the problem.

“We can quantify the guy acting rationally,” that’s highly predictable, especially across groups and systems. It’s not that we need to abandon math or abandon science; it’s a different kind of math and science,” Curtis says.

Plus, looking beyond the mechanics of the power grid to take the motivations of the operators into account — in other words, expanding our aperture to consider how environmental factors motivate entities — can bring about more robust, longer-lasting solutions, he says. “The wider you make the aperture, the more national security value you’re going to have,” Curtis says. “It doesn’t mean we should take on every problem as a complexity problem, but it certainly means that we should look for and seize the chance, the know-how, and the data, that expanding those apertures could make a bigger difference for the nation.”

The future of adaptive systems, of these orga- nized complex systems, is in engineering and biology. People who have access to real systems, who tweak them, and see real data, those are going to be the people who make a difference,” Curtis says. “And, that looks kind of like us.”

Curtis’ talk was followed by a lively discussion and some requests for feedback, which is what the DATACon organizers had hoped presenters would experience.

Organizers say they’ve heard about collaborations beginning at DATACon between speakers and attendees, who came from about 60 organizations in six divisions around the Labs. And those collaborations are continuing at the DATACon wiki at https://snl-wiki.sandia.gov/display/DATACon, where presentations are being posted and Sandians can contribute to a discussion board, Judy says.

Barbara Mills (5517), who was able to attend two half-hour sessions at DATACon, says the conference was useful to learn about software and tools that could be applied to her job at Sandia.

“The valuable thing about the conference is that a lot of us aren’t cognizant of the breadth and the depth of all the different tools and techniques people are applying to data here at Sandia,” Barbara says. Judy says the DATACon organizers would like feedback and suggestions from participants and attendees so they can prepare for next year’s event. Email Judy at jspomer@sandia.gov.

“The purpose of DATACon is education, collaboration, and inspiration,” Warren says. “We wanted researchers to say, ‘Wow! I didn’t know that was going on in the Labs.’”

Among the other more than 30 conference speakers at DATACon 2011 were:

- Bernard Gomez (2957) talked about the need for data fusion and visualization techniques in nuclear weapons stockpile evaluation. Bernard was one of several featured speakers at the first DATACon conference, a grass roots effort to bring together researchers, who are producing vast amounts of data, and data analysts, who have the tools researchers need to make the data meaningful.

- Elebeoba May and Amy Powell (both 8635) led a discussion on Sandia’s work on computational systems biology and bioinformatics, both of which draw on computational methods and concepts to analyze and model biological and medical data. Researchers attending the talk engaged in a lively exploration of the subject and discussions of how computational methods can best solve the problem.

- Elke Pfeiffer (1426) and Art Munson (8966) gave presentations on cloud computing (a way to do lots of data-intensive computations on inexpensive cluster computers). May and Pfeiffer also presented a programming framework for writing parallel computations, and techniques for dealing with analysis on large, distributed data.

- Scott Mitchell (1464) discussed an algorithm that provides an approximate count of the number of times each datum was seen in a datastream, which uses less computer memory when monitoring network traffic.

- Chris Young (5563) spoke about why semantic monitoring is the method of choice to detect fully contained or partially contained underground nuclear explosions, and outlined the challenges associated with semantic monitoring, progress that has been made to overcome them, and the focus of future research.

- Warren Davis (1461), Alla Fishman (1465), and Cynthia Phillips (1465), among others, spoke about why seismic monitoring is an important problem, and outlined the challenges associated with seismic monitoring, progress that has been made to overcome them, and the focus of future research.

- Jean-Paul Watson (1465) discussed an algorithm that outlines the challenges associated with seismic monitoring, progress that has been made to overcome them, and the focus of future research.

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**LM Voice follow-up**

(Continued from page 1)

development is a personal responsibility. However, we all are not random. "We're not just talking about throwing out employees with mentors. The Focus on Leadership website (leader.sandia.gov) another set of tools has been developed to connect employees and mentors. Sandia is bolstering the mentoring program, noting that another set of tools has been developed to connect employees and mentors to help employees make sense of the larger organization's goals, you have a better perspective on how your contributions connect to those goals.

Conversations regarding the mission and the employee's relationship to it should occur between managers and their direct reports before the end of the calendar year, Kim says. More specific career development discussions will occur over the course of FY12. "What's going to happen then," she says, "is that the results of those discussions will be incorporated into the employee's performance feedback."

In the area of career development, Kim says that Sandia is bolstering the mentoring program, noting that another set of tools has been developed to connect employees and mentors. The Focus on Leadership website (leader.sandia.gov) rolled out those tools last month. "This isn't something that's mandatory; it's voluntary," Kim adds. The new website is designed to help employees share their wealth of knowledge and experience. I encourage everyone interested in this opportunity to visit the mentor profile on the Become a Mentor web page (http://tiny.san dia.gov/become_a_mentor). It becomes most effective when you match a critical mass of participants. Once we have enough people in the system, it will be powerful.  

In addition to career development, discussions about the mission and strategic objectives will help employees improve the performance management process with a better understanding of how their work fits in with the organization's vision.  

Another area that has implications for the performance management process is the TotalComp initiative, which is expected to roll out next spring. "TotalComp will help in many ways," Kim says, "but one in particular is around performance management. The change we will see in that area, especially in the functional areas that was identified in the LM Voice Survey as one of those 'areas of concern.'" At the time, he cited 1) budget pressures, 2) uncertainties about the economy, and 3) the two-year salary freeze mandated by DOE, as factors that made the pay and benefits issue particularly problematic to one area.

Kim says, "We have, however, worked to make sure we're doing the best we can for our employees [regarding] pay in the current environment, and we have also been looking at our benefits."

As such, she adds, Sandia launched the Total Health Plan last year. "That was new for our employees," Kim says, "but it was something we needed to do to pave the way for our future." And as even as the new plan was rolled out, Kim says, the Benefits team focused on continuous improvement, looking for ways to make sure the Total Health Plan is better and more effective for employees.

As a result "the final version [of the health plan] was a great surprise to employees—we don't have it in California at this point—a choice to go into a network plan that will allow employees to have a lower deductible and lower total cost if they use the doctors and the resources within a preferred network."  

**Performance management**

Kim says she thinks the TotalComp transition "will be a big step in helping a lot of our employees and their managers engage with their employees."

**Pay and benefits**

Last summer, Paul noted that the issue of pay and benefits support the mission, is that we will be evaluating employees in their peer groups: HR people will be compared to HR people; IT people will be compared to IT people; and so on."

Kim says she thinks the TotalComp transition "will help bring a lot of clarity for our employees and their managers relative to the entire performance management process." She adds, "Taking a continuous improvement approach, TotalComp will be evaluated and refined on an ongoing basis.

**Mission first and foremost**

Sandia's focus on employee attention was not identified in the LM Voice survey as an area of concern, Kim says it's a subject that's important to watch going forward. "Our feedback tells us in the area of employee focus and retention, however, we recognize that what's not something you can take for granted. . . . As a Laboratory, we have experienced a very different type of organization. We have not grown up in the Laboratory. Thus, we need to ensure that we maintain a balance in order to continue the legacy that we've so prided ourselves on."

Kim notes that while the areas of concern identified in the survey appropriately command the largest amount of management attention, "we need to keep in mind — as several commented in the survey — Sandia's greatest strengths are its people, the way they work in concert, the way they collaborate, the way they think, the way they lead and the way they make the commitment to the future."

It is also important, Kim says, to recognize that "much of the feedback we received from our employees is positive. The results reflect that Sandia is still a wonderful place to work and that we have challenging, stimulating work that satisfies people. We must also recognize that what Sandians really care about, first and foremost, is delivering on our mission."  

**FY11 accomplishments**

Jerry says FY11 accomplishments include:

- Uncertainty, reversals, and extreme budget reductions prevailed across the board, Jerry said, not just in Nuclear Weapons, the Lab's largest program. "It's been an incredible exercise going through ways in which we imagine and make real the future stockpile."

- Funding provided. That dialog never ends." He said another issue is that Sandia does not yet have clear guidance from the administration. He also commented in the survey — Sandia's greatest strengths are its people, the way they work in concert, the way they collaborate, the way they think, the way they lead and the way they make the commitment to the future."

- Revenue, costs, and full-time employees were managed to within 1 percent of the budget of the Future stockpile, making sure we have the capabilities, that we have, we should be proud of, are robust, and in good working order: the tools, the facilities, the people."

- Jerry says he believes the nation's leadership will "do the right thing — making sure we are taking care of the stockpile we have and are properly positioned for the stockpile of the future; making sure we have the capabilities we have, that we should be proud of, are robust, and in good working order: the tools, the facilities, the people."

- Jerry said, to remember the Labs No. 1 strategic objective as outlined by Sandra President and Labs Director Paul Hommert: Deliver with excellence on our commitment to the national security. Jerry added, "It's more than machines. It's the people behind those machines."
Shedding new light on an old challenge

THE LIGHT FANTASTIC — Jonathan Wierer (1123) calibrates a configuration used to test the perception of the human eye to laser lighting. The experiment proceeded like an optometrist’s exam: Test subjects were repeatedly asked, Do you prefer the left picture or the right (see below)? One picture would be illuminated with laser lighting, the other with incandescent or LED lighting. Neither researchers nor test subjects knew which was which until the results were evaluated. The laser lighting was well-received by the test subjects. (Photo by Randy Montoya)

Photographs by Randy Montoya

Little work had been done to research (much less commercialize) diode lasers for lighting because of a widespread assumption that human eyes would find laser-based white light unpleasant. It would be composed of four extremely narrow-band wavelengths — blue, red, green, and yellow — and would be very different from sunlight, for example, which blends a wide spectrum of wavelengths with no gaps in between. Diode laser light is an order of magnitude narrower than that emitted by LEDs.

The tests — a kind of high-tech market research — took place at the University of New Mexico’s Center for High Technology Materials. Forty volunteers were seated, one by one, before two near-identical scenes of fruit in bowls, housed in adjacent chambers. Each bowl was randomly illuminated by warm, cool, or neutral white LEDs, by a tungsten-filament incandescent light bulb, or by a combination of four lasers (blue, red, green, yellow) tuned so that their combination produced a white light.

The experiment proceeded like an optometrist’s exam: The subjects were asked, Do you prefer the left picture or the right? All right, how about now? The viewers were not told which source provided the illumination. They were instructed merely to choose the lit scene with which they felt most comfortable. The pairs were presented in random order to ensure that neither sequence nor tester preconceptions played roles in subject choices, but only the lighting. Alexander Neumann, a UNM doctoral student of professor Steve Brueck, wrote the computer program and created the set.

Each participant, selected from a variety of age groups, was asked to choose 80 times between the two changing alternatives, a procedure that took from 10 to 20 minutes, says Sandia scientist Jonathan Wierer (1123), who helped plan, calibrate, and execute the experiments. Five results were excluded when the participants proved to be color blind. The result was that there was a statistically significant preference for the diode-laser-based white light over the ‘warm’ and ‘cool’ LED-based white light, Jon says, but no statistically significant preference between the diode-laser-based and either the neutral LED-based or incandescent white light.

Results were not expected to start a kind of California gold rush of lighting fabricators into diode lasers, says Jeff, but merely to open a possible, formerly ignored, line of research. Diode lasers are slightly more expensive to fabricate than LEDs because their substrates must be made of lower-defect densities than those used for LEDs. Still, he says, such substrates are likely to become more available in the future, as they also improve LED performance.

Also, while blue diode lasers have good enough performance that the automaker BMW is planning their use in its vehicles’ next generation white headlights, performance of red diode lasers is not as good, and yellow and green have still further to go before they are efficient enough for commercial lighting opportunities.

Still, says Jeff, a competition wouldn’t have to be all or nothing. Instead, he says, a cooperative approach might use blue and red diode lasers with yellow and green LEDs. Or blue diode lasers could be used to illuminate phosphors — the technique currently used by fluorescent lights and the current generation of LED-based white light — to create desirable shades of light.

The result makes possible still further efficiencies for the multibillion dollar lighting industry. The so-called smart beams can be adjusted on site for personalized color renderings for health reasons and, because they are directional, also can provide light illumination where it’s wanted.

Colorimetric and experimental guidance was provided by the National Institute of Standards and Technology. The research was published in the July 1 Optics Express.

The work was conducted as part of the Solid-State Lighting Science Energy Frontier Research Center, funded by the DOE Office of Science.

IN THE TEST SETUP, similar bowls of fruit were placed in a lightbox with a divider in the middle. The bowl on one side was illuminated with a diode laser light, the other was lit by a standard incandescent bulb. This photograph shows that the aesthetic quality of diode laser lighting (left bowl) compares favorably with standard incandescent lighting (right). (Photo by Randy Montoya)

THE WHITE GLOW from the convergence of four colored lasers suggests the viability of diode-laser based lighting. (Photo by Randy Montoya)

FOUR LASER BEAMS — yellow, blue, red, and green — converge to produce a pleasant warm white light. The work by Sandia researchers suggests that diode laser-based lighting could be an attractive alternative to increasingly popular LED lights, themselves an alternative to compact-fluorescent lights. (Photo by Randy Montoya)
ECP gives hope where there is none

Marta Grundy, Cuidando’s Community Resource director, says 60 percent of their funding comes from the community. “We also receive state program money for food. The rest of our funding comes from private foundations. We couldn’t do it without our community’s charitable giving.”

Gandy was especially happy that morning. CLN had just received 200 pairs of shoes from a manufacturer. She said each of the shoes were handed out that day. “We locked up on disposable diapers.”

CLN believes that working together we have the talents and means to put an end to homelessness in our communities.

Feeding, Housing, Educating

Cuidando Los Niños: together we have the talents and the means to end homelessness

Meet our clients: the children who are hungry, employed, and the ones who are not

“Feeding, housing, educating are three computers at CLN are available for parents’ use in caring for their children at 5 p.m. Some of the children are picked up, others are taken home on the CLN’s bus. Many live with other relatives, in shelters, or in their family’s car. On Friday, CLN partners with Roadrunner Food Bank and each child is given a backpack with food to last a week during the weekend.

The CLN program is available for a year to each family. During the year, in addition to providing therapeutic help for the children, CLN works on family development with each family. Families are referred to a network of counselors to ensure all their needs are being addressed.

CLN is in partnership with Albuquerque Healthcare for the Homeless, examines each child, their siblings, and parents, and works on keeping them healthy.

Parents are required to attend weekly classes on life skills, health, job readiness, behaviors, and other topics. These computers at CLN are available for parents’ use in getting jobs and becoming self-sufficient.

Each child we serve is different. “But we all need love, care, and attention for a healthy mind and body,” says CLN’s Chief Operating Officer Holly Eiffert.

“Children in homelessness are not any different from any of our neighborhood children.”

Albuquerque Speech Language Center

Dismas House New Mexico Inc.

Sandia to answer your questions:

New this year:

One Man Scorned and Covered with Scars

Carol and the Efforts

Carol Efford (2006) saw the picture of Ada, a 3-year-old girl from Guatemala, on a television. She said, “I cried when I saw the picture of Ada. She looked so much like my daughter Andrea. I looked like she suffered so much. Would we be the right family for her?”

Ada had been turned all over her body when she was 18 months old and had spent more than a year in the hospital.

Through Healing the Children, Ada was scheduled to come to the US from Guatemala for medical care if a sponsor family could be found to take her. Healing the Children brings children to the US from countries where medical treatment is not available, sends medical teams to Latin America, and helps local doctors in need. The international children are housed, fed, and comforted by volunteer host families. The children are soon and treated at no cost by volunteer doctors.

Carol and her family had hosted a host family on several occasions before, but this time the week before the healing would start the family would be gone. Due to a horrible accident, a home burned with Ada inside.

“Then a miracle (She is dead)”, the firefighters said of Ada. But she wasn’t dead. Her grandmother begged the firefighters to take her to the hospital, where she remained for a year.

Medical teams in Guatemala recommended that Ada be brought to the US for more surgeries.

“Ada cried one entire day when she got here,” says Carol. “She was tired but she was worth it. She had the cutest personality and we immediately loved her.”

During the initial visit, surgeons were done to remove some of the worst burns on her hands and wrists. Making her hands functional was a priority.

“Do I get to be the one to hold her after her surgeries there wasn’t was question she was my daughter,” says Carol. “She calls me mama or mami do es en andada (mother from the United States). She is a part of our family.”

Ada came back for more surgeries when she was 6 years old and again when she was 11 years old. Much burn scar releases and grafts were done.

“It was wonderful sewing her again,” adds Carol. “With every stitch her heart beats a little deeper.”

“Ada has been here since May. We’ve had such a wonderful time. Two local surgeons, Dr. William Longley and Dr. Tom Rakobom have operated on her to improve the vision on her face and release her fingers. It has been her dream. She is grateful to the surgeons and Albuquerque Surgical Center who are making this possible by donating their expertise.”

The surgeons have also cared for her during the Children trips to Guatemala on medical missions.

The Eiffert family has patients who are Cuidando’s children, David and Holly, who were age 13 and 15 when Ada came the first time.

They call them hormones (brother and hormone (sister). Today Ada is 19 years old and enjoying staying with her hormones, Holly’s husband’s, A. J. Wolfe (984), and her son, Evan, while she receives more treatment.

“Me gusta mucho estar aqui,” says Ada. “Me gusta al parque con de mi hermano.” I like being here. I like to go to the park with my sister’s son.”

One of the reasons Ada loves to come has is to practice her English. She says the Efford family says she has gotten quite good. They teach her English and she teaches them Spanish. Together they have become a bilingual family that gets along marvelously.

Marilyn’s miracle when people care

Christy’s story

When I came to Cuidando Los Niños, my family was broken. I was staying at a domestic violence shelter, and I was 5 years old. I was spent over my entire family. Children 6 to 9 years old are given special assistance in early childhood development and preschool programs.

The children are food-family-style for breakfast and lunch, and are given a snack before they leave to be with their families at 3 p.m. Some of the children are picked up, others are taken home on the CLN bus. Many live with other relatives, in shelters, or in their family’s car. On Friday, CLN partners with Roadrunner Food Bank and each child is given a backpack with food to last a week during the weekend.

The CLN program is available for a year to each family. During the year, in addition to providing therapeutic help for the children, CLN works on family development with each family. Families are referred to a network of counselors to ensure all their needs are being addressed.

CLN is in partnership with Albuquerque Healthcare for the Homeless, examines each child, their siblings, and parents, and works on keeping them healthy.

Parents are required to attend weekly classes on life skills, health, job readiness, behaviors, and other topics. These computers at CLN are available for parents’ use in getting jobs and becoming self-sufficient.

Also Oct. 27 –

HBE Fun walk to support ECP

Join ECP and HBE for a brisk lunchtime walk at 11 a.m. at Hardin Field on Thursday, Oct. 27. Evin 5 Virginia MilePoints for participating. Engage in a little friendly competition by getting as many active minutes as you can. Those reaching 131 steps per minute will be entered into a prize giveaway.

Bring a friend, enjoy the outdoors, and improve your physical and mental health. Consider stopping by the Thunderbird Café to learn more about community-funded agencies related to health and have a healthy lunch.

Story by Iris Aboytes

Photos by Renee Baros (3652)

Cuidando Los Niños (CLN) identified more than 2,000 homeless children under the age of 6 in-Bernalillo County. Cuidando Los Niños, a United Way community agency, strives to provide high-quality development and therapeutic services to meet the needs of children experiencing homelessness.

CLN provides support service to help clients to break the cycle of homelessness, believing there should be a home for every child. CLN has a five-star national rating and their success rate is 74 percent.

A 2004 report by the Bernard van Leer Foundation submitted to the United Nations Committee on the Rights of the Child, states — Survival and development are simultaneous. Development is not something that occurs after survival. Children are our future. What happens to children in their first days, months, and years of life affects their development, the development of our society, and the development of our world.

One man scorned and covered with scars still strolls with his last ounce of courage to touch the unreachable stars, and the world will be better for his size... – says Carol. “Our family’s world is better because of Ada and we’ll look forward to having her back again.”

For more information about Healing the Children, you may contact Carol at caeiffe@sandia.gov

Misty’s story

“ sporting a silk and cotton dress with scarfs with ears will strolls with his last ounce of courage to touch the unreachable stars, and the world will be better for his size... – says Carol. “Our family’s world is better because of Ada and we’ll look forward to having her back again.”

For more information about Healing the Children, you may contact Carol at caeiffe@sandia.gov

People with at least 15 active minutes (135 steps per minute) will be entered into a prize giveaway.

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Now this year:

Caring Thursdays: Participating United Way agencies will be at Sandia to answer your questions:

Oct. 20 – Steve Schiff Auditorium
All Begeh Lincoln
Dumas House New Mexico Inc.
FBLA Family Services
St. Martin’s Hospitality Center
Oct. 27 – Thunderbird Café
Albuquerque Speech Language Center
Roadrunner Food Bank
S.A.F.E. House

Nov. 3 – Thunderbird Café
Metals on NW
Albuquerque Metropolitan Homeless Project
Purdue University Endowment

Employeering Program

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Path to Picasso decorates Sandia

By Patti Koning

A s Sandians enter the Micro and Nano Technologies Laboratory (MANTL) each morning, they will soon be greeted by Hydrogen Man, as depicted in the mural “Hydrogen Man versus Carbo.” Occupants of other buildings need not feel jealous, however — Hydrogen Man, along with four other clean energy-themed murals, will be rotated among the lobbies of MANTL (940), the Combustion Research Facility (904), the Combustion Research Computation and Visualization building (905), the Distributed Informations Systems Laboratory (915), and Bilg. 911.

Local middle and high school students created the murals this summer through the Path to Picasso program, a partnership between Horizons Family Counseling, the city of Livermore, and the Livermore Police Department. The program, now in its fifth year, gives at-risk youth the opportunity to work with a local professional artist to create a large piece of art that is displayed publicly.

Horizons, a division of the Livermore Police Department, provides family counseling, case management, and parent training for Tri-Valley families. Last year Jacquie Reardon (8131) invited the organization to participate in a site SHARE (Sandia Helps and Reaches Everyone) event, which is where the idea for the Path to Picasso Sandia project first emerged.

“I noticed some blank walls and started to imagine the possibilities,” says Horizons youth and family services manager Lynn Gardner. “Path to Picasso art has decorated City Hall, the Livermore Police Department, the Bankhead Theater Plaza, and the Wheels Transit Department. The program, now in its fifth year, gives at-risk youth the opportunity to work with a local professional artist to create a large piece of art that is displayed publicly.”

When the murals were unveiled at a SHARE event Sept. 22, the artwork struck a chord with many Sandians. “I love this mural,” said Glenn Kubiak (8600), looking at Hydrogen Man vs. Carbo. “They really had to be pioneers. When we first got started, many of these kids weren’t sure if they could do it. Finishing a project like this and seeing the reaction was enough and you’ll find the botnet lurking near the lower left-hand corner.”

Best friends Cianna Chavez and Brandon McCullough worked together on “Clean Energy versus Pollution,” a painting that shows a street dividing two very different buildings. Jaidee Sandoval was inspired by Sandia’s research into creating fuel from natural things to paint “Biomass Transit.” Yvonne Nolasco used a tree as the unifying theme of her appropriately named painting, “Communi-tree.”

“We are delighted with the art created by the Path to Picasso students. Sandia is very proud to support such an important community program,” says Mike. “This is a great example of a community partnership that has been developed through SHARE.”

At the Sept. 22 SHARE event, host Jacquie told her personal story of the impact that Horizons had on her life. “Years ago, my teenage daughter began making some very grave choices and we were dealing with matters of life and death on a daily basis. I was ready to send her to a teen boot camp, when I took to the recommendation of a counselor at Horizons to try something different,” she explains. “Horizons gave me the ability to parent my child through it personally.”

Jacquie also shared the happy news that her daughter is now transferring to California State University—East Bay with a 4.0 grade point average. She added that a family’s situation does not have to be as grave as hers was to benefit from Horizons. “They are available for a myriad of challenges,” she says. “We don’t have to parent alone — it took an entire community to raise my daughter effectively.”

For more information on Horizons Family Counseling, visit http://www.cityoflivermore.net/citygov/horizons/default.asp.
Sandra employees won’t see any increase in their health insurance premiums next year due to the performance of the lab’s health plans over the past three years, says Mary Romero Hart, manager of Benefits Dept. 3332. Sandra not only will keep premium rates flat, she says, as a new provider network option, known as the Sandra Health Partner Network (HPN), will help employees reduce their out-of-pocket expenses while providing additional benefits.

“It’s a great news overall, especially in light of the average increase in health care costs nationally of 7 to 8 percent,” Mary says. “We think we’re having a great deal of success in meeting our goals of improving health care in the Sandra community and holding our providers more accountable.”

Although Sandra has been able to hold rates steady, it’s no guarantee of future performance, she says.

The new HPN partnership places Sandra in a direct relationship with the Lovelace Health System and a group of providers committed to improving the quality of care. Sandra employees will be able to use the Sandia HPN providers more efficiently, she says.

“Later this year, Sandra will host a planning meeting with stakeholders to establish agreed 2012 goals/objectives along with metrics that will seek to improve the overall health of the Sandra population. Detailed information about the program will be available during Open Enrollment.”

Open Enrollment elections

Just like last year, you will make your 2012 Open Enrollment elections online from PeopleSoft HR Self-Service. However, this year the link will be provided through hbe.sandia.gov beginning Monday, Oct. 24. Hbe.sandia.gov is a public website available inside and outside the Sandia network. However, if you wish to make your elections from home, you must first log into Sandia using your Cryptocard and then go to hbe.sandia.gov.

During Open Enrollment you may:

{\begin{itemize}
  \item Enroll, disenroll, or make changes to your medical plan(s)
  \item Enroll, disenroll, or waive a dental and/or vision plan
  \item Enroll or disenroll a dependent in your medical, dental, or vision plans
  \item Enroll in a healthcare or daycare flexible spending account (even if you are currently enrolled)
  \item Enroll in the vacation buy plan (even if you are currently enrolled)
\end{itemize}

Important: If you are currently enrolled in the Healthcare FSA, Daycare FSA, and/or Vacation Buy plan, you must re-enroll if you wish to participate in 2012.

Detailed information on 2012 changes can be found in the 2012 Benefits Choices Open Enrollment Newsletter, available on hbe.sandia.gov.

Represented employees

Nonrepresented employees have the option of enrolling in Sandra Total Health administered by BlueCross BlueShield of New Mexico, Sandra Total Health administered by Kaiser Permanente (California only), or Sandra Total Health administered by UnitedHealthcare. All nonrepresented employees are encouraged to review the available selections for their 2012 medical plan in your 2012 Benefits Choices newsletters or the PeopleSoft HR Self-Service. Employees who take no action will continue with the same medical, dental, and vision coverage in 2012.

Represented employees

Effective January 1, 2012, Sandra Total Health administered by BlueCross BlueShield of New Mexico (BCBSNM) will have access to the Sandra Health Partner Network (HPN). Sandra Total Health BCBSNM members who use the Sandra HPN providers will see increased benefits through lowered out-of-pocket costs. The Sandra Total Health plan design will essentially remain the same; however, the employee premiums for this plan have been lowered, and the deductible, coinsurance, and out-of-pocket maximum costs will be reduced for participants who access Sandra HPN providers. See the Sandra Total Health BCBSNM pages on hbe.sandia.gov for details.

Open Enrollment for employees

Oct. 24-Nov 10

5 p.m. MT

Employee benefits fairs

This year, the Health, Benefits, and Employee Services Center will be hosting several benefits fairs for employees. Come and ask your benefit questions of the Sandra health plan vendors and/or the benefits staff.

Albuquerque, New Mexico

All New Mexico Open Enrollment Fairs will run from 8 a.m. through 4 p.m. All employees are welcome to arrive before the presentations begin or stay after they end to speak with representatives from:

{\begin{itemize}
  \item Sandra Health Plans Team
  \item Catalyst Rx
  \item Delta Dental
  \item Davis Vision
  \item HBO Preventive Health
  \item Payflex
  \item UnitedHealthcare
  \item Kaiser Permanente
  \item Lovelace Health Systems
\end{itemize}

This event will be held at the Bldg. 904 auditorium. All employees and their spouses are welcome to arrive anytime between 10 a.m. and 3 p.m. to speak with representatives from:

{\begin{itemize}
  \item Sandra Health Plans Team
  \item Delta Dental
  \item Davis Vision
\end{itemize}

Livermore, California

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\end{itemize}

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2012 Benefits Choices — Open Enrollment for Employees

Open Enrollment 2012 for all active employees (represented & nonrepresented) will be held Monday, Oct. 24 – Thursday, Nov. 10, 2011 (5 p.m. MT)

Open Enrollment 2012 for all active employees (represented & nonrepresented) will be held Monday, Oct. 24 – Thursday, Nov. 10, 2011 (5 p.m. MT). Employees who select the HPN option can reduce their total health care expenses, such as premiums, deductibles, coinsurance, and out-of-pocket maximums. They also can receive such additional benefits as the following:

{\begin{itemize}
  \item Easier access to physicians, including more frequent same-day appointments
  \item An ambassador/concierge program to connect Sandra patients with Lovelace Health System hospitals and physicians
  \item Programs that will bring community providers to Sandra’s onsite clinic
  \item A new pharmacy program to coach employees on proper use of medications
\end{itemize}

An ongoing partnership with the Sandra Preventive Health team to further develop and complement existing wellness programs and services.

“Although Sandra has been able to hold rates steady, it’s no guarantee of future performance,” Mary says. “We think we’re having a great deal of success in meeting our goals of improving health care in the Sandra community and holding our providers more accountable.”

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Open Enrollment for employees

Oct. 24 Nov 10

5 p.m. MT

More Open Enrollment information

Open Enrollment website: hbe.sandia.gov

Sandra Laboratories Customer Service


Sandra Retirement Processing Team

UnitedHealthcare

Kaiser Permanente

PayFlex

BlueCross BlueShield of New Mexico

Kaiser Permanente

Payflex

Livermore, California

Employee benefits fairs

This year, the Health, Benefits, and Employee Services Center will be hosting several benefits fairs for employees. Come and ask your benefit questions of the Sandra health plan vendors and/or the benefits staff.

Albuquerque, New Mexico

All New Mexico Open Enrollment Fairs will run from 8 a.m. through 4 p.m. All employees are welcome to arrive before the presentations begin or stay after they end to speak with representatives from:

{\begin{itemize}
  \item Sandra Health Plans Team
  \item Delta Dental
  \item Catalyst Rx
\end{itemize}

Can’t attend a fair? Beginning Monday, October 31, a recorded video presentation will be posted on the site.

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{\begin{itemize}
  \item Sandra Health Plans Team
  \item Delta Dental
\end{itemize}

Livermore, California

This event will be held at the Bldg. 904 auditorium. All employees and their spouses are welcome to arrive anytime between 10 a.m. and 3 p.m. to speak with representatives from:

{\begin{itemize}
  \item Sandra Health Plans Team
  \item UnitedHealthcare
\end{itemize}

This event will be held at the Bldg. 904 auditorium. All employees and their spouses are welcome to arrive anytime between 10 a.m. and 3 p.m. to speak with representatives from:

{\begin{itemize}
  \item Sandra Health Plans Team
  \item Delta Dental
\end{itemize}

Livermore, California

Employees considering retirement

Can’t attend a fair? Beginning Monday, October 31, a recorded video presentation will be posted on the site.
2012 Benefits Choices — Open Enrollment for Retirees and Surviving Spouses

Open Enrollment 2012 for Sandia retirees and surviving spouses will be held Tuesday, Nov. 1 — Wednesday, Nov. 23, 2011 (5 p.m. MT)

Extend Health will manage the Open Enrollment for Sandia for Sandia’s retirees, surviving spouses, and long-term disability terminees. Detailed information on 2012 benefits changes will be published in the 2012 Benefit Choices and Enrollment Guide sent from Extend Health to all participants’ home addresses starting Oct. 18. Please review your Benefits Guide for information on your 2012 premiums rates and (Medicare) Your Spending Account (YSA) credits. If you have changed your mailing address since last year’s Open Enrollment, please contact Extend Health.

Sandia Health Partner Network
(for PreMedicare Retirees only)

Effective Jan. 1, 2012, all retirees enrolled in Sandia Total Health administered by BlueCross BlueShield of New Mexico (BCBSNM) will have access to the Sandia Health Partner Network (HPN). Sandia Total Health BCBSNM members who use the Sandia HPN providers will see increased benefits through lowered out-of-pocket costs. The Sandia Total Health plan design will essentially remain the same; however the deductible, coinsurance, and out-of-pocket maximum costs will be reduced for participants who access Sandia HPN providers. See the Sandia Total Health BCBSNM pages on the sandia.gov for details.

Open Enrollment Sessions

Extend Health will host several Open Enrollment sessions in Albuquerque and Livermore for PreMedicare and Medicare retirees to provide information on open enrollment choices. Representatives from Extend Health, Sandia Benefits, and the health insurance carriers will be available during these sessions to answer your questions. These are the only sessions being held to provide 2012 health plan information.

Albuquerque, New Mexico

All presentations will be held at the UNM Continuing Education Conference Center, 1634 University Blvd. NE.

Albuquerque PreMedicare presentations

<table>
<thead>
<tr>
<th>Tuesday, Nov. 1</th>
<th>Time</th>
<th>Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extend Health / UnitedHealthcare</td>
<td>11 a.m.-noon</td>
<td>Open to all PreMedicare Retirees</td>
</tr>
<tr>
<td>Extend Health / BCBSNM &amp; HPN</td>
<td>1 p.m.-2 p.m.</td>
<td>Open to all PreMedicare Retirees</td>
</tr>
<tr>
<td>Extend Health / UnitedHealthcare</td>
<td>11 a.m.-noon</td>
<td>Open to all PreMedicare Retirees</td>
</tr>
</tbody>
</table>

All retirees are welcome to arrive before the presentations begin or stay after they end to speak with representatives from:
- Extend Health/Marsh
- BlueCross BlueShield of New Mexico
- UnitedHealthcare
- Catalyst Rx
- Davis Vision
- Delta Dental

Albuquerque Medicare presentations

<table>
<thead>
<tr>
<th>Tuesday, Nov. 1</th>
<th>Time</th>
<th>Audience</th>
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</thead>
<tbody>
<tr>
<td>Extend Health / Presbyterian/Lovelace</td>
<td>9 a.m.-10:30 a.m</td>
<td>Medicare Last name begins A-E</td>
</tr>
<tr>
<td>Extend Health / Presbyterian/Lovelace</td>
<td>1:30 p.m.-3 p.m</td>
<td>Medicare Last name begins F-L</td>
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<tr>
<td>Extend Health / Presbyterian/Lovelace</td>
<td>9 a.m.-10:30 a.m</td>
<td>Medicare Last name begins M-Z</td>
</tr>
<tr>
<td>Extend Health / Presbyterian/Lovelace</td>
<td>1 p.m.-2:30 p.m</td>
<td>Medicare Last name begins S-Z</td>
</tr>
</tbody>
</table>

All presentations will be held at the UNM Continuing Education Conference Center. All retirees are welcome to arrive before the presentations begin or stay after they end to speak with representatives from:
- Extend Health
- Lovelace
- Delta Dental
- Presbyterian
- Davis Vision

Livemore, Calif.

All presentations will be held at the Robert Livermore Community Center, Cresta Blanca Ballroom, 4444 East Ave, Livermore, Calif. 94550

Livermore PreMedicare presentations

<table>
<thead>
<tr>
<th>Thursday, Nov. 10</th>
<th>Time</th>
<th>Audience</th>
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</thead>
<tbody>
<tr>
<td>Extend Health / Kaiser</td>
<td>11:30 a.m.-12:30 p.m</td>
<td>Open to all PreMedicare Retirees</td>
</tr>
<tr>
<td>Extend Health / UnitedHealthcare</td>
<td>1 p.m.-2 p.m</td>
<td>Open to all PreMedicare Retirees</td>
</tr>
<tr>
<td>Extend Health / BCBSNM</td>
<td>2:30 p.m.-3:30 p.m</td>
<td>Open to all PreMedicare Retirees</td>
</tr>
</tbody>
</table>

All retirees are welcome to arrive before the presentations begin or stay after they end to speak with representatives from:
- BlueCross BlueShield of New Mexico
- Kaiser Permanente
- Catalyst Rx
- Davis Vision
- Delta Dental

Livermore Medicare presentations

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<thead>
<tr>
<th>Thursday, Nov. 10</th>
<th>Time</th>
<th>Audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extend Health / Kaiser Senior Advantage</td>
<td>9:30 a.m.-11 a.m</td>
<td>Open to all Medicare Retirees</td>
</tr>
</tbody>
</table>

All retirees are welcome to arrive before the presentations begin or stay after they end to speak with representatives from:
- Extend Health
- Davis Vision
- Kaiser Permanente
- Delta Dental

More retiree Open Enrollment Information

For more information regarding Retiree Open Enrollment, contact Extend Health customer service at 888-596-7809 from 7 a.m.-7 p.m. MT.
Retiree Gary Shepherd didn’t have to read articles on animals being the ideal therapeutic visitors for patients in hospitals and other medical facilities, to know that indeed they are. Gary takes Annie and Sam, both Cocker Spaniels to visit the patients at Paloma Blanca Health and Rehab Center every Saturday afternoon. "One day more than 20 years ago, Bo, Penelope, and I went to visit a sick friend," says Gary. "Bo and Penelope were our first cocker spaniels. The patients were very receptive to them, so we kept on going back."

Gary takes eight year old Annie and two and a half year old Sam. "Annie is the driving force," says Gary. "She knows what to do. We go to the common areas. The workers there already know Annie and Sam and talk to them by name. Then we go from room to room. We ask the patients if they like dogs. If they do, we go in. If they don’t, we move on."

Some of the patients don’t get very many visitors so they are especially happy to see Annie and Sam. Sometimes Annie jumps on patient’s beds. Usually these are the patients who can’t reach down or who want closer contact. She seems to sense the right thing to do. Sometimes even shy Sam joins her.

Annie and Sam know it’s their job to visit the patients. "It is amazing to see them," Gary says. "Once we’re finished visiting, we go home and they pile up on the couch for a nap."

Gary was at Sandia for almost 40 years in computer consulting and telecommunications. In some respects Gary is still at Sandia. He is involved in Sandia’s annual Employee Recognition Awards ceremony and other Sandia awards events. He acts as production and lighting designer and handles all of the show’s technical logistics. Besides his background in math and computer science, Gary also studied technical theatre while in college. "When events started happening after Lockheed Martin came in, I was sought to help with the technical theater aspects and have continued doing this."

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In the 1970s Gary and Shelly, his wife, founded and directed a children’s theater project on south Edith. "We took kids off the streets, trained them in musical theater, and put up full productions for the neighborhood," says Gary. "I still occasionally run into our ‘kids’ (now in their 40s), who remember that they learned to read better by studying scripts and music."

"Because of the limited musical range of the children, I wrote 12 children’s musicals during those years with titles such as Snore Trek and Franklin’s Shocking Mouse Tale. We had a lot of fun for a lot of years. The kids appear to have derived lasting value from our work. I have also done lighting design in community theatre and for the Expose Dance Company."

Gary states, "I have always been interested in the theater arts and the creative aspects of making things happen. I enjoy the process of designing and building something that is really pleasing to people."

"Working at Sandia was wonderful," says Gary, "because of Sandia, I got to pursue a technical computing career and was able to pursue my artistic endeavors and do my volunteer work. Now as a retiree, there is more time. There is never a dull moment."

Annie and Sam bark in agreement as Sam chases after one of his 14 tennis balls. Life is good.