



JOHN KELTON (6218) prepares samples for NASA's ablative shield materials test at the top of Sandia's solar tower. NASA chose the solar facility after determining it was the only

facility in the country that could provide the tightly focused high temperatures required for their tests. See Stephanie Holinka's story on page 9. (Photo by Randy Montoya)

RIDDLE OF THE DESERT GLASS

SANDIA SCIENTIST Mark Boslough joined a BBC/*National Geographic* documentary film crew that traveled to the remote reaches of the Libyan Desert in far western Egypt to unravel the mysterious origins of rare glass used in jewelry found in King Tut's tomb. Filmmakers hoped Mark's expertise in impact physics might just help provide an answer. In a colorful first-person account, Mark shares his adventure with *Lab News* readers on pages 6-7.



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Tom Hunter and John Stichman interview . . .

Strategic Plan seeks to position Labs for era of rapid transformation

Note: In conjunction with the Labs-wide rollout of the 2007 Strategic Plan (Lab News, Sept. 1), the Lab News sat down with Sandia President and Director Tom Hunter and Executive VP John Stichman for their insights into what the plan means for the Labs' future. The interview, in Tom's office, was conducted by Bill Murphy and John German. To read more about the Labs' strategic plan on Sandia's internal web, go to: www-im.sandia.gov/es/new2006/strategicplanning/



TOM HUNTER



JOHN STICHMAN

Lab News: Can you tell us, in just a few minutes — the elevator speech, if you will — why it's important that Sandia have a strategic plan and how this plan differs from plans we've had in the past?

Tom Hunter: It's important that we view Sandia as an organization that has a strategic intent: It knows what it wants to be and it knows the role it wants to play in the nation, which is around national security. And that strategic intent should be mindful of the reality of the world we are in today.

Our new strategic plan tries to capture that: What is it that we, in our best judgment, intend for the Laboratory to be and in what kind of world are we going to operate?

Are we talking about a wholesale difference in the way the Laboratory operates? Probably not a *wholesale* difference, but the new plan reflects a much deeper awareness of the need to transform so that we're properly positioned to meet the expectations of the nation, of our environment.

We will have to have — all of us, everyone in the Laboratory — a shared understanding of our strategic intent, an understanding about where the organization must go, and how we start aligning ourselves around that.

(Continued on page 4)

LOGIIC helps keep oil, gas control systems safe

Sandia serves as lead lab in security system integration



LOGIIC team members Bryan Richardson and Weston Henry (both 5612) demonstrate the project's monitoring solution hosted at Sandia's Center for Control Systems Security, which is managed by Jennifer Depoy (5615). (Photo by Randy Montoya)

By Michael Padilla

If \$3 a gallon for gas seems high, imagine the cost consumers could face if a terrorist attack were to severely damage or cripple America's oil and gas infrastructure.

Such an attack by viruses, worms, or other forms of cyber-terrorism on oil and gas industry process control networks and related systems could destabilize energy industry supply capabilities and negatively impact the national economy.

To help reduce the chance that such an attack could succeed, the Department of Homeland Security (DHS) and oil and gas companies created Project LOGIIC (Linking the Oil and Gas Industry to Improve Cyber Security). It aims to keep US oil and gas control systems safe and secure.

The LOGIIC consortium, funded by industry and the DHS Science and Technology Directorate, brought together 14 organizations to identify ways to reduce cyber vulnerabilities in process control and SCADA (supervisory control and data acquisition) systems. The goal of the 12-month project was to identify

(Continued on page 8)

Also inside . . .

- New California site VP Paul Hommert meets staff Page 3
- Sandia, LANL, UNM tech transfer groups share major recognition . . . Page 9
- Fiesta de Vida blood drive marks Hispanic Heritage Month Page 12
- Cries of 'Mama Kindy' echo across Honduran village Page 12

What's what

If you've had a chance to look through the rest of this issue of the *Lab News* before getting here, you may wonder why there's no special note of the fifth anniversary of the 9/11 terror attacks on New York and Washington.

At the last meeting to plan coverage for this issue, members of the staff talked about 9/11 and about how best to recognize and remember that horrific day. As the meeting wore on and the discussion evolved, we came to the realization that the *Lab News* has recognized that awful event in virtually every issue since it happened, although not overtly.

Issue after issue, readers found stories about Sandia-developed technology that was in use in the global war against terrorism – to support military, intelligence, and diplomatic efforts around the world to find, foil, or destroy those who would destroy us. And stories about Sandians leaving their jobs to put on uniforms and serve in Afghanistan, Iraq, and other faraway places in the life-and-death struggle against terrorism.

There has always been something – issue after issue, month after month, year after year. Even our new strategic plan, reported in this issue, reflects in part our response to 9/11.

Eastern Air Lines has faded into aviation history, but a promotional slogan that became as identifiable with it as Orville Redenbacher's glasses and bow tie became with popcorn sums up nicely Sandia's efforts on behalf of the nation's security: "We earn our wings every day."

* * *

And by the way, an example of the esteem enjoyed by Sandia researchers is a subtext of Mark Boslough's (1433) first-person account of his participation in a documentary made for BBC and *National Geographic*. Mark was in Egypt for his part in the project, and you'll find his fascinating story in the center spread of this issue.

* * *

In a recent issue of *The Wall Street Journal*, Jared Sandberg's column "Cubicle Culture" offered an interesting – if disturbing – take on the "yes man" in corporate culture. There are lots of vignettes about the frustrations of working for yes men ("man/men" here being gender-neutral), including Sandberg's observation that "No matter how deftly delivered, a 'no' to a yes man is transformed into one of corporate America's most career-limiting charges: you're not a team player."

That's the serious stuff. But inclined to look for at least a little humor in the world around me, I found a high point in a reference to the Virtual Reality Amusement Company website. I googled it up and went there, looking for the Virtual Yes Man, who (which?) dispenses bromides such as "I know I put in long hours, but you deserve all the credit" and "I thrive on deadlines. Just let me know what you need" and, of course, "Yes, I agree." (Anything sound familiar?)

If you want to check it out – probably on your own time – go to www.hereinreality.com/funnystuff/ and click on "Virtual Yes Man" in the Virtual Reality column and then on the "Press here for affirmation" button in the middle of the page.

And if you're interested in Sandberg's whole column, go to www.careerjournal.com/columnists/cubicleculture/20060726-cubicle.html.

– Howard Kercheval (844-7842, MS 0165, hckerch@sandia.gov)

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Hands-On Minds-On Technologies Program celebrates 20 years

An event to initiate a history project

On Saturday, Sept. 23, at the UNM Student Union Ballroom, students, instructors and volunteers of HMTech will come together to celebrate 20 years of promoting academic excellence in science, math, and engineering.



HMTech began in 1986 under the direction of the Black Leadership and Outreach Committee as a curriculum to promote academic achievement in the local community.

The Hands-On Minds-On Technologies (HMTech) Science Program is an educational supplement targeting middle and high school students, who participate in courses such as robotics, computer programming, mathematics, anatomy, and crime scene investigation.

The purpose of the program is to give students hands-on experience with technology and promote careers in engineering, math, and science. The program also provides in-class professionals to serve as role models and mentors. The success of the HMTech program led to the development of Manos and Dream Catchers, other Sandia outreach educational programs.

The 20th anniversary celebration will focus on the early days of HMTech and the program's accomplishments during the past 20 years. Speakers will include people familiar with the beginning of the program. All will reflect on the celebration theme: Yesterday's Beginnings, Today's Legacy, and Tomorrow's Stars. HMTech program coordinators will also be honored at the celebration.

Following the celebration there will be an interview session to gather firsthand accounts of the HMTech program and document its history in a SAND report.

For more information contact Jacquelynne Hernandez, 844-6576 or Delvin Wood, 284-5870.



Annual Emergency Management exercise on Sept. 20

Scores of Sandians to take part in nearly day-long drill

Be alert on the morning of Wednesday, Sept. 20. There *will* be — not might be — some commotion in Tech Area I.

That's because of the nearly day-long annual emergency management (EM) exercise, which is designed to test the emergency response of more than a dozen Labs EM functions such as Incident Commanders, consequence assessment teams, rescue-recon teams, security, public information, and the like.

The exercise will involve participation by emergency response personnel from other area agencies. Some goals of the exercise: meeting emergency management requirements as stated in DOE Order 151.1C; validating Sandia's emergency plan and associated implementing procedures; verifying the adequacy of emergency response facilities, equipment, and communications systems; and very importantly, verifying that emergency response personnel are familiar with and perform their assigned duties.

To achieve realistic play, a variety of guidelines will be used. In particular, employees in buildings within areas impacted by the exercise's emergency scenario will be required to take protective action. At the same time, measures will be taken to limit that impact on normal operations.

Once protective actions are completed and reported, building personnel will be able to go back to work. Additionally, employees will be allowed to enter and exit their buildings through specified routes.

California site's new vice president welcomes challenge

By Nancy Garcia

Adventure, challenge, and making a contribution all appeal to new Sandia/California VP Paul Hommert. That is the message employees heard at an introductory gathering on Paul's second day on the job on Aug. 29.

Paul returns to Sandia after more than six years in leadership roles at two other research facilities. He spent three years as the director of research and applied science at the United Kingdom's Atomic Weapons Establishment (AWE) and then three years heading up the Applied Physics (X) Division at Los Alamos National Laboratory (LANL).

"I tried to convince him that this is a great place with great people and great opportunity and great challenge," said Sandia President Tom Hunter. "He was yearning to make a broader contribution."

Paul has earned a reputation for being an outstanding leader with experience in energy, engineering, and nuclear weapons. In his talk, he told employees about his background and anticipation for the future, and revealed some glimpses of humor — such as joking they may see him around site in either his typical baseball cap or a new bike helmet, due to recent safety requirements.

Emphasis on energy comes full circle

He told employees that he began at Sandia/New Mexico in 1976 to work in energy programs, adding that it has been interesting to see the nation's emphasis on energy come full circle. His work in a range of programs included research in geophysics, geothermal energy, and the Strategic Petroleum Reserve. He spent time in Wyoming on oil shale and coal gasification, becoming familiar with the California site's combustion research in the process.

Later, he was involved in the early days of Cooperative Research and Development Agreements, including Sandia's enormously successful, ongoing relationship with Goodyear. Through

that experience, he developed an appreciation of industry partnerships.

After becoming director of engineering sciences in 1995, Paul was responsible for establishing Sandia's development of engineering simulation as part of NNSA's strategic computing initiative. His organization also provided engineering analysis for a full range of Sandia programs.

That work brought him to the California site on a regular basis. Paul said he developed an appreciation for its unique nature that combines a manageable size with a variety of programs, adding that he looks forward to becoming better acquainted through meetings with employees over the next few weeks.

In 2000, Paul joined a Lockheed Martin team that had been contracted to manage the AWE. His 800-person organization was responsible for physical, material, and engineering science support of the weapons program. He said the British government was trying to fundamentally change how it

builds its nuclear weapons deterrent. The shift was influenced by the US stockpile stewardship program, with the goal of downsizing while establishing a core science program. Before Paul left, the initial 10-year management contract was extended to a 25-year term.

He returned briefly to Sandia in 2003 to direct the Labs' nonnuclear work for DoD. He then joined LANL, where he led some 350 scientists, engineers, and support personnel responsi-



WARM WELCOME — Paul Hommert spoke to Sandia/California employees on his second day as their incoming VP. He will head Division 8000 and the Homeland Security and Defense Strategic Management Unit.

(Photo by Randy Wong)

ble for nuclear weapons design and assessment, weapon performance code development, and supporting weapons science. In addition, he oversaw investment of some \$200 million for physics program deliverables across LANL.

From his work at what he termed "three of the four English-speaking nuclear weapons labs in the world," Paul brings a deep understanding of the nuclear weapons program. He also has some insight into the contract renewal process underway now at Lawrence Livermore National Laboratory (LLNL), from having supported former Sandia President Paul Robinson in contract negotiations to manage LANL.

Building a national constituency

Lawrence Livermore has a right to expect a weapons engineering capability that is second to none, Paul said, referring to its partnership with Sandia/California. Both labs also share a broader national security mission in which they can collaborate to build a national constituency.

In addition to leading Division 8000, Paul follows retiring VP Mim John as head of the Homeland Security and Defense Strategic Management Unit. He said he has been impressed by her role as he watched DHS develop. Tom also praised her advocacy within the Labs and at the national level, saying she has provided strength and encouragement moving forward.

In response to questions from the audience, Paul said he sees significant value in both experimental and computational work. The key is having the right mix between the two. With respect to foreign national hiring, he said, it's his personal view that great scientific institutions can't be insular, so having foreign nationals can be a valid way to support scientific enterprise.

Summing up, Paul said, "I look forward to our journey together; I think it will be a good one."

Sandia California News

In New Mexico . . .

Feedback

What are the regulations for using my Segway in and around the Labs?

Q: What are the specific regulations regarding the use of the Segway Human Transporter (scooter) at Sandia? Specifically, I am interested in rules as they apply to the vehicle gates, Kirtland streets and sidewalks, and also specifically within the Sandia tech areas. Since Sandia and Kirtland have long touted (and demonstrated) this alternative transportation technology, I assume the base and Sandia are "friendly" towards these vehicles. Please elaborate.

A: In New Mexico a person on a Segway[®] Human Transporter is considered to be a pedestrian and they are treated as such. The Sandia traffic regulations follow the state requirements with the recommendations that riders of the Segway wear a bicycle-type safety helmet and gloves. For entry to Sandia areas controlled by gates we recommend using the bicycle entry gate. KAFB also considers these vehicles as pedestrian transport and also requires that you meet the base policy for bicycle riders (helmet, light, reflective stickers for night use, etc.). Kirtland and Sandia both follow New Mexico traffic laws as a minimum. The Segways, as pedestrian transport, should be operated on the sidewalks with due caution for other pedestrians walking or jogging. A rewrite of "Traffic Safety," Section 4K, in Sandia's ES&H Manual will formalize Sandia's position with respect to use of Segways.

— Ed Williams (10864)

Retiring VP Mim John leaves site with 28 years of memories



On Aug. 30, under warm blue skies, Sandia/California said farewell to VP Mim John. Staff and management from across the site offered remembrances and well wishes, honoring Mim for her 28 years of dedication to the Laboratory and the California site.

Each California director presented her with memorabilia representing her leadership and key accomplishments achieved during her tenure. The series of humorous and affectionate tributes brought a tear not only to her eye but also to those of people in attendance. Employees from the Division Diversity Council and Foreign National Networking Group also presented her with thoughtful mementos and thanked her for her unwavering support.

To cap the occasion, Mim sang her own lyrics to the tune of "Thanks for the Memories," and encouraged the crowd to continue with their excellent work and dedication to the Labs' missions.

PARTING GESTURE — Among the gifts that retiring VP Mim John received was a stack of bills bearing her photo.

(Photo by Randy Wong)

Strategic plan

(Continued from page 1)

The biggest transformation I see is that we will move toward being a laboratory in which lots of different organizations are aligned with their own environment and where organizations are aligned together to meet a broader set of common challenges.

Taking it to the individual level

LN: What does this plan mean when you take it down to the level of the individual?

TH: Well, first it means an awareness — at the individual level — of this idea of shared strategic intent.

The expectation for each and every person would be that, “I know where we are today and have the sense of where we need to be tomorrow and I in my own job can figure out a way to move us in that direction. My work, the way I structure my work, the way I do my work, the way I think about how my work can be done more effectively — all of those can help create that future.”

One thing it will mean is that we will all have a broader awareness of what everyone else is engaged in, so that we don't have places where people are doing something and other places where people are doing the same thing without an awareness of each other — within the limits of proper need to know.

John Stichman: It's fitting — since we haven't had a focused, ground-up strategic planning effort and articulation of a strategic plan for some six years — it's fitting for us to re-engage that process, not only at the senior leadership level but at the working level, too.

The new plan gives us a chance to remind ourselves of what we're really all about and how each of us has a role in helping the Laboratory realize its strategic intent.

What does the plan mean for the individual? Let's say you're working in the nuclear weapons program. We really would hope that [by understanding this plan] you'd have a deeper appreciation of what the Laboratory is trying to accomplish as it helps the nation in the transformation of the stockpile and the complex.

Similarly, if you're working in the broader national security mission, we'd hope you'd see that the new plan seeks to maximize our contribution in that area in an integrated way. And that we'll do this having operated the Laboratory in a

and how it provides that security. All those institutions associated with the nation's security will be expected to do a lot more, contribute a lot more, and to do it in a much more effective fashion.

In five years a lot of what is expressed is our hope. My strongest *personal* hope is that Sandia will be viewed as unique in the way it presents a new perspective on science, the application of science and technology to the nation's most pressing problems. If one wants to experience what it means to come and work with an institution that represents the forefront of science and technology applied to national security and apply it in a new and different way, Sandia would be recognized as a place where that is happening — uniquely recognized as a place where that is happening.

Sandia will still be a 'place'

LN: In five years, will Sandia be organized along the lines of what we see today? Will it even be a place — a physical place?

TH: Sure it will be. Regardless of the evolution of network-centric societies there will need to be places like Sandia and Sandia will be a place where people are together. It will also be dispersed where we have strong affiliations with others. But there will be a centrality of our locations and the functions that happen there and the core capabilities that reside there.

We will have much higher connectedness to other places that have a strong affinity to our missions. So we will exist as a place, a strong place, because we have this enormous investment in unique facilities.

Will we be a place of science and technology? Yes. Will we be a place where we have a broad dimension of workforce that handles not only science and technology but ways to put that all together into management systems and things that really work? Yes. Will we have a greater engagement with strategic partners — universities, federal agencies, perhaps with some industry or consortium? Yes, we'll have a broader

engagement. The general look and feel, I hope, is of a place of excellence, a special place, a place that is in many ways unique.

LN: How about 10 years from now?

TH: I think there is a difference between five and 10 years. Ten years is a framework where there's very little urgency. If you set a goal for 10 years out, it's a nice target but

it's not bold, it's not urgent, so you don't tend to transform yourself towards it. Five years is short enough that it's consistent with my sense of urgency. In five years, we do want to be a different place and it's urgent that we start moving to get there.

JS: I expect that for some time to come, nuclear weapons will still be a very key element of how peace and freedom are assured, and Sandia will surely be exercising a very, very key stewardship role in assuring that we maintain that.

And then the other part is to be sure that we have maximized our contribution to the broader set of national security needs, based on our capability to deliver innovative, science-based system engineering solutions.

Regardless of the time frame you're talking about, my prediction and my hope would be that Sandia maintains this ethos that we have, that we're here to perform an exceptional service in

the national interest. I really believe that we will maintain that over the foreseeable future and we ought to seek to maintain that.

TH: There are a few words that I would give you that we would like to be known for: agility, efficiency, reliability, creativity, inventiveness, and responsiveness. Those kinds of words express how we want to be characterized and known —

“If one wants to experience what it means to come and work with an institution that represents the forefront of science and technology applied to national security and apply it in a new and different way, Sandia would be recognized as a place where that is happening — uniquely recognized as a place where that is happening.”

Photos of Tom Hunter by Randy Montoya, shot at the 2006 Lab News State of the Labs interview.



in a way far beyond where we are today.

And I think we should characterize our ability to create that future as one in which we're aided by our relationship with NNSA. We have a shared intent, we share the intent with NNSA of trying to achieve that vision.

Why get behind the plan?

LN: For the typical employee out there reading this interview, why should I get behind this? What are the consequences if we fail as a lab to realize the intent and direction of this plan?

TH: Every employee shares the needs for a productive career, for rewards that are in line with that, and a family life. But I believe, at the core, you come to Sandia because you have this sense that this is a place you can provide a national service. That's why we're here. That's why we try to deliver all that we can in the most effective way we can. We have to work aggressively to make sure the nation has confidence in us, to make sure that case is sustained.

As we go about our daily jobs, we need to always ask ourselves: “How can I deliver more for less? How can I simplify my role? How can I make sure this job is well done? How can I make sure that people who follow me in my role are mentored and trained and supported, and put that into practice day by day?”

If we really approach our work in those terms, it will make a big difference as we move into the future. This plan is an expression of how one does all that over the reasonable foreseeable future.

JS: One of the things Tom has mentioned several times is this notion of confidence — the customer, the government, the people of the country having confidence that they will get the result they want from the Laboratories. And we have a history of providing extraordinary results. Very often that has happened because of the extraordinary talent of the staff working heroically. And I celebrate the idea that we have heroes in the company. We need people who can step forward when things really require heroics.

But in addition to that, in order to provide confidence, people have to understand that obtaining a good result isn't just a happy accident. It's something that they can count on, something that has been achieved through a concerted, deliberate effort on the part of this extraordinary staff. If we can move ourselves to where we're working in concert toward the common vision, we won't need to call upon people in so many emergencies and to exercise heroics.

Will the Labs' size remain stable?

LN: Will we sustain the Labs at its current size as we move forward with this plan?

TH: The size of the Lab is an important factor and it's something we spend a lot of time managing and trying to keep about right. Ultimately, the [Labs'] size is derived from how we best serve the nation. But I think of it not so much as keeping a certain size, but more from the standpoint of whether we fulfill our mission

(Continued on next page)



“[I]t's fitting for us to reengage that process, not only at the senior leadership level but at the working level. . . . The new plan gives us a chance to remind ourselves of what we're really all about and how each of us has a role in helping the Laboratory realize its strategic intent.”

Photos of John Stichman are frame grabs from Video Services' coverage of the 2006 Spring Managers Forum.

very mindful, intentional way that we call operational excellence.

Sandia five years from now

LN: Based on the direction set out in the plan, what do think Sandia will look like five years, 10 years from now? Will we still recognize the institution that we know today? Or will it be utterly different?

TH: Let me try to answer that in the context of what, in our view, the world will look like — which by the way, we do not and cannot know. One can only make a judgment about that and see where it goes.

It will be a world — again, in our view — where the security of the nation is still an important concern of the American people. And by that I mean the broadest sense of security, all the way from energy to nuclear deterrence and that whole spectrum of things. It will also be a world that expects a lot more from the federal government

Strategic plan

(Continued from preceding page)



“That is, will Sandia be a place of challenge in the future? Yes. Technologically, will it be a place of excitement? Yes. Will it be a place of learning? Yes. Will it be a place of opportunity? Yes. Will it be a place of leadership? The answer is yes.”

as best we can.

In other words, if we fail to achieve our goals, what we will have missed is an opportunity for excellence and greatness that we can have if we truly rise up to a new level.

To whatever extent we aren't pulling together, aren't working together, that represents a wasted effort, it represents suboptimal work, and that puts at risk the mission. Any time you put at risk the mission you put at risk the entity that's been called upon to do the mission, and in that case, that's this Lab. And so it diminishes us from our highest goal whenever we do that.

LN: Does a stable lab size — which the the plan anticipates, at least for the near future — necessarily mean stability for groups and individuals? Or, rather, is it that we are going to need to be more flexible?

JS: We have made some shifts already, responding to some shifts in the national needs, such that people have done some moving from nuclear weapons work to other national security portions of the mission. And we need to have flexibility to do that. At the same time, we need to not just be driven by the winds of fortune, but rather be intentional about how we move and manage people. This kind of flexibility can be locally disruptive to an individual or organization, but overall, if it leads to a more responsive laboratory, we are better able to have a positive future. To whatever extent we fall short of that detracts from that opportunity.

TH: I think it's important for us also to accept a bit of urgency, because what we're talking about is a healthy laboratory that needs to get much stronger. My personal sense is that in the 5-to-10-years-from-now time frame, the pressures on our federal government, the customers we support, are going to be very intense. And only those who have moved *beyond* healthy are going to be able to provide the kind of support that is required.

So I would hope people today feel we're healthy, but that there is this need to really get prepared for a different kind of future in the next five to 10 years. I would like everyone to feel the

Benefits, recruitment, and retention:

How they fit, the role they play in the new strategic plan

LN: Recruiting and retaining the best people is an important aspect of the plan. Do you think what we can offer prospective employees in terms of benefits and rewards is enticing enough to assure some level of continuity? Will benefits and rewards remain compelling enough to encourage a potential recruit to choose Sandia over somewhere else?

TH: John should address [this question] because he has a key objective around just this topic, but let me preface it by saying that we enjoy a wonderful benefits situation today. It is derived from this value that we place on our people. The value we place on our people will not be changed. We will deal with benefits challenges in the future as the nation deals with them, and we will need practical solutions to these benefit challenges.

We'll have to ask how we provide the best value for our employees within the reality of the world we live in. We haven't made substantive changes to our benefits plan, but everyone knows, particularly this last year, how the cost of benefits is being addressed nationally and the way DOE has engaged the topic. But one thing everyone should have confidence in is that this care for and concern for our people and trying to ensure Sandia remains a place of choice to work and a place of choice to stay for a career is the driving feature in how we do our benefits plan.

JS: Part of our strategic objective — and we set it out in our plan — is to be able to not only bring

in talented people but also develop that talent for the future. We continue to work on strategies for doing that.

As we examine how to approach benefits for the future, we examine it not just from a standpoint of what does it cost but how does it help us hire, retain, and develop the extraordinary talent we have.

We recognize that people come to Sandia and stay at Sandia for a complex variety of reasons; some of it has to do with the lifestyle, some of it has to do with the kinds of professional opportunities that you have at the Laboratory, some of it is people wanting to work on certain classes of problems, for example. We have to be sure that we attend to those considerations, just as we attend to the benefits package.

TH: To elaborate on that, John talked about attracting and retaining people based on a complex set of factors. Our objective addresses several characteristics of Sandia's future. That is, will Sandia be a place of challenge in the future? Yes. Technologically, will it be a place of excitement? Yes. Will it be a place of learning? Yes. Will it be a place of opportunity? Yes. Will it be a place of leadership? The answer is yes.

Those characteristics embody the way we want to go forward. Together with that comes this sense that we care for our people and we will manage the benefits in a way that reinforces this.

sense of urgency that we have to be fundamentally stronger or we will not be able to provide the service our customers will need.

Transformation, operational excellence

LN: Tell us about transformation. How does Labs transformation relate to the strategic plan?

JS: We have formed a strategic management group (SMG) that we labeled Lab Transformation, with me as the executive in charge. The idea here is that we have always needed and had groups that cared for the foundations of the Laboratory — foundations in terms of its science and engineering, what we call ST&E [Science, Technology, and Engineering], and the foundations around its operational infrastructure.

We have always had that; we just didn't associate them together. So the idea is to bring that together as a unified way to manage the foundational aspect of the Laboratory. The other two SMGs concentrate on the two major programmatic areas, the nuclear weapons programmatic area and the broader national security missions area, which we call Integrated Technologies and Systems.

By naming the new strategic management group Lab Transformation, the intent is to emphasize the transformation into an era of scientific and operational excellence. I've heard people say we are going to transfer people into this SMG and the like. Actually, my view of this SMG

“[P]eople come to Sandia and stay at Sandia for a complex variety of reasons; some of it has to do with the lifestyle, some of it has to do with the professional opportunities . . . some of it is people wanting to work on certain classes of problems. . . . We have to be sure that we attend to those considerations, just as we attend to the benefits package.”



is that it does have a defined leadership group among the vice presidents, but every group in the Laboratory, in fact every individual, is a part of the Lab Transformation SMG. Any time we are working, any time we are doing some sort of operations, we are part of that transformation of the Laboratory into operational and science and engineering excellence. And so to me that's a key idea. It isn't some separate entity that someone, somewhere else is working on transformation of the Laboratory. It's something that's deeply embedded throughout the Laboratory.

TH: I did want to talk about uniqueness if we could. The nation expects us to be unique. We are defined by our charter, and we are defined by our role as an FFRDC [federally funded research and development center], to be not only unique but special. So it is really against our origin and our charter to become like everybody else. It is in our nature to provide that special distinguishing characteristic around science and engineering applied to the national interest. It will be incumbent upon us as we go through this transformation to be sure that we are unique by bringing excellence to the things we talked about. We cannot function as just another so and so; we have to be this special, unique place.

LN: So 10 years from now folks will still be calling themselves Sandians with a special sort of pride.

TH: Well, I would say more than that, the nation will look at Sandians in a way that evokes not only pride in the people who work here but the special recognition that says that if I'm a potential employee that's where I'd like work, or if I'm a customer that's the place I'd like to convince to do work for me, or if I'm a policy maker I'd have a strong sense that this nation is more secure because we've got Sandia there.



“I would say that . . . the nation will look at Sandians in a way that evokes not only pride in the people who work here but the special recognition that says that if I'm a potential employee that's where I'd like work, or if I'm a customer that's the place I'd like to convince to do work for me, or if I'm a policy maker I'd have a strong sense that this nation is more secure because we've got Sandia there.”

THE RIDDLE OF THE DESERT GLASS

Documentary film crew seeks answers — with help of Sandian Mark Boslough — to origins of desert glass used in King Tut's priceless breastplate

Story and photos by Mark Boslough (unless noted)



Speeding across the vast expanse of Sahara desert sand in a four-wheel drive vehicle was not something I had thought to put on my Outlook calendar when I planned this year's activities.

Riding in a caravan of Land Cruisers with me are two other scientists and a British film crew. Our goal is to reach the site of an

unusual deposit of the purest natural silica glass ever found, covering an area bigger than Bernalillo County in the Libyan Desert of western Egypt.

It was in 1932 that British explorers in Model-A Fords first visited this part of the desert, where they discovered the mysterious yellow-green glass scattered across the surface. Ever since, Libyan Desert Glass has fascinated scientists, who have dreamed up all sorts of ideas about how it could have formed. It's too silica-rich to be volcanic. In some ways it resembles the tektites generated by the high pressures associated with asteroid impacts. That observation is the starting point of a scientific debate that was the subject of the documentary being filmed for *National Geographic* and BBC.

An astonishing discovery at the Egyptian National Museum

I was chosen to participate in the role of a dissenter from the preferred explanation that the glass was formed by direct shock-melting by a crater-forming asteroid impact. I had stumbled into the debate by accident in 1996, when I attended a conference in Bologna on the subject of the 1908 explosion of an asteroid or comet that knocked down nearly a thousand square miles of trees in Siberia. I stayed an extra day to attend a meeting about the desert glass, where I argued that similar — but larger — atmospheric explosions could create fireballs that would be large and hot enough to fuse surface materials to glass, much like the first atomic explosion generated green glass at the Trinity site in 1945.

Shortly after that workshop, one of the Italian organizers made a discovery that raised public interest in the subject. Vincenzo de Michele visited the Egyptian Museum in Cairo, and noticed that one of King Tutankhamun's jeweled breastplates contained a carved scarab that looked suspiciously like a piece of the glass. A simple optical measurement confirmed the match in 1998. The connection of a catastrophic explosion with the treasures of ancient Egypt eventually became a sure-fire formula for a documentary to be called "Tutankhamun's Fireball."

Did I want to be part of this?

Last December, when I was first asked by the producer to be interviewed for the documentary I was a little skeptical. After all, television is known more for sensationalization than for scientific accuracy, and the King Tut connection had fueled pseudoscientific speculation on the web. One website even presents fanciful "Evidence for Ancient Atomic War," making the case that Egyptians had detonated nuclear weapons (but ignoring the fact that the glass is 29 million years old). Did I want to be part of this?

Fortunately, I was assured by other scientists that this would be a legitimate documentary that would focus on natural explanations for this enigmatic glass.

Then, just before the holidays, the producer asked if I would join a scientific expedition to the site, along with an Egyptian geologist and an Austrian colleague who specializes in geochemistry of shocked materials. Six weeks later, I found myself in Cairo with Dr. de Michele, getting a firsthand look at King Tut's glass scarab and preparing for nine days in the desert.

MARK BOSLOUGH'S work on collision dynamics and impact physics modeling is funded by Sandia's Laboratory Directed Research and Development (LDRD) program. The trip to study the Libyan Desert Glass provided an opportunity to gather real world physical data to reinforce computer modeling and simulation of impact events.



LIBYAN DESERT GLASS — Did King Tutankhamun hold up his glass scarab to see the same refraction of light? Did he call his young bride Ankheseenamun to see it too?

1,000 km over the Great Sand Sea

Our jumping-off point was the Bahariya Oasis, a large valley of villages and adobe houses that (except for the date palms) looked a little bit like those of old New Mexico. After the 300-km drive on a two-lane highway through the lifeless desert, the irrigated fields were startlingly green — the last green we would see for some time.

Leaving the road at the last checkpoint, we embark on a 1,000-km voyage across the Great Sand Sea. Despite the lack of water, that name is apt. Like mariners, we don't follow a specified route. We are guided by the sun, compasses, dead-reckoning, and (like modern sailors) GPS. If the dunes are the swells of the open ocean, our first day's trip is an excursion through a field of icebergs. Towering monuments, hoodoos, and mesas of stark white limestone provide a maze through which we meander, opening up to a featureless flat sand plain.



MARK BOSLOUGH (at left), Cynthia Page (TV6 director/producer, at right), and members of the documentary crew and outfitters at their campsite deep in the desert. The apricot firewood from Bahariya Oasis was used every night. A bowl of peanuts was served as a snack every night around the fire, washed down with Luxor beer. (Photo by Christian Koeberl)

make it. The naturally occurring geological finds are the most exciting. Several times we find fulgurites, sand that is fused into worm-like shapes by lightning



strikes. Our best find is a meteorite, a large stone that had probably been sitting on the sand for millennia, covered and uncovered countless times over the ages.

Tea brewed Bedouin-style over an apricot wood fire

February in the Sahara is cool, and the wind blows so hard on the Great Sand Sea that it can be hazy like a marine fog. Every night our guides park their vehicles in the shape of a U, open to the east, with exotic rugs for windbreaks and comfortable sleeping for the crew (the scientists and film crew sleep Western-style, in dome tents). We have our meals here, with sugar-saturated tea brewed Bedouin-style over an open flame of apricot wood carried from the orchards of Bahariya.

As we progress to the southwest, the rolling sand builds to great seif dunes and the sea rises. Vehicles frequently get stuck and have to be rescued by digging and driving up special aluminum ramps. It takes a special sailor's eye to distinguish between a safe hard surface and the treacherous soft sand, especially at 100 km/hour. Driving against the grain of the dunes means rising over the crests and dropping down the other side, over and over for hours: speeding, digging, rising, dropping. Arabic, French, and English conversations crackle over the radio, and throbbing Egyptian music plays on the driver's iPod.

Just before we reach the site of the glass, the dunes become linear — unbroken parallel ranges running north-south for hundreds of kilometers. Here we must carefully pick our crossings, and then we run at high speed southward in the "corridors," the freeways that have been used by nomads for centuries (as evidenced by 100-year-old camel skeletons).

The riddle remains, but friendships endure

On our third day after leaving the last road, our maps tell us we are within the area where glass has been found. We stop to look. There are pieces of sandstone everywhere, and no plants in sight. It looks strikingly like the surface of Mars, and sand sifts underfoot. The first bits of glass we find are yellow-green jewels that have smooth surfaces sculpted by the incessant wind. We hold them up to the sun to see how the light refracts and scatters. This is probably what the Pharaohs did with their piece, and the Neolithic people before them.

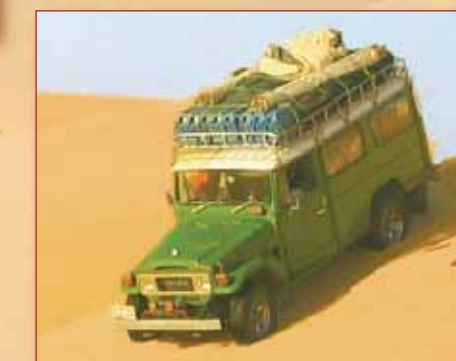
Nine days of geologic exploration and discussion bore fruit. You get to know your colleagues well during long days driving and long nights in camp. Everyone figures out the strengths and weaknesses in one another's ideas. It would be premature to claim that we solved the mystery, but new friendships and collaborations have emerged, and renewed interest in this scientific mystery has energized debate over this unique glass.



MAKING CAMP in the Great Sand Sea.



Ancient Asteroid will be shown Sept. 21, 8-9 p.m., on the National Geographic Channel (channel 52 on Comcast cable in Albuquerque). National Geographic's website describes the program this way: "Ancient Asteroid traces the amazing story of how a quest to uncover the origins of a strange yellow-green glass used in one of Tutankhamun's necklaces leads to the discovery of a historic cosmic event in the Egyptian desert. What happened there 30 million years ago could happen again and threatens us all."



OVER THE DUNES, again and again and again . . .



. . . and buried axle-deep in sand more than once.



SCIENTIST Christian Koeberl examines a just-discovered meteorite.



TV6 FILM CREW interviews Mark Boslough about formation of the desert glass.



Tutankhamun's pectoral with winged scarab is one of the "22 masterpieces of Tutankhamun" at the Egyptian Museum in Cairo. The scarab centered on the falcon represents the Egyptian sun god, Khepri.

In 1996, Italian researcher Vincenzo de Michele and colleague Giancarlo Negro visited the Egyptian Museum and realized that the solar scarab closely resembled the Libyan Desert Glass, something they confirmed through optical tests. In 1999, *New Scientist* published the story, which ultimately led to the BBC/*National Geographic* documentary. (Photo courtesy of TV6 Productions)



LOGIIC

(Continued from page 1)

new types of security sensors for process control networks.

One of several related projects

LOGIIC is one of several related information infrastructure protection R&D projects — including the DOE National SCADA Test Bed and the I3P control systems security research program — being

“By breaching the physical security at a field site, an adversary could potentially then gain access to the control systems network by simply plugging in their laptop.”

Ben Cook (5634)
Sandia’s LOGIIC project lead

conducted by Center 5600’s Information Assurance and Survivability business area led by senior manager Gary Rivord (5610).

A Sandia-created test environment was used to counter potential threats to the oil and gas industry using hypothetical attack scenarios. Based on the knowledge gained from their industry partners, Sandia researchers created two real-time models of control systems used for refinery and pipeline operations.

Ben Cook (5634), project lead for Sandia, says the objective of LOGIIC was to bring together government, asset owners, vendors, and the research community to develop ways to better protect the critical infrastructure. He says a key element of LOGIIC’s public-private partnership model was the leadership role it gave to industry partners — in this case the oil and gas asset owners — to define the technical problem to be tackled and manage the project toward a successful outcome.

“Current control system operators have limited situational awareness,” he says. “In LOGIIC, industry leaders chose to focus the partnership team’s initial work on addressing their concern that control networks aren’t monitored for cyber intrusions as is routinely done on business networks. As a result, it’s difficult to detect cyber adversaries who might be attempting to compromise critical system components.”

LOGIIC partners

LOGIIC brought together experts in homeland security, oil and gas, security research, security technology, and process control technology.

- **Government:** DHS Science and Technology Directorate
- **Oil and gas industry:** Chevron, CITGO, BP, and Ergon Refining
- **Research:** Sandia, Adventium Labs, and SRI International
- **Security vendors:** ArcSight, 3Com/Adventium Labs, and Symantec Corp.
- **Process control technology vendors:** Honeywell, OMNI Flow Computers, and Telvent

Project results were shared at the LOGIIC Summit, Sept. 11, in Houston, Texas. The meeting showcased results and promoted the partnership model as a template for future public-private partnerships to improve infrastructure security. A field test of the LOGIIC solution will begin later this year. The LOGIIC website is at www.logiicpcs.com.

Doug Maughan, LOGIIC program manager at DHS, says 85 percent to 90 percent of the critical infrastructure in the US is in the hands of the private sector. “The success of this project is a strong example of how private industry can team with the Department of Homeland Security to further the cause of critical infrastructure protection,” he says.

The monitoring system developed in LOGIIC is based on the very latest commercial enterprise detection and correlation technologies adapted to monitor control networks, providing asset owners with dramatically improved situational awareness, Ben says.

Sandia scenarios

To test LOGIIC’s monitoring capabilities, Sandia researchers came up with five vulnerability scenarios based on cyber compromises commonly used in the hacker community. Two scenarios were extensively tested.

The first scenario highlighted the increased risk control systems are exposed to as they are increasingly connected to business networks. These networks are in turn commonly connected to the Internet.

“We wanted to show how someone can get from the outside all the way in through the business network down through the control system and affect a piece of equipment in the field.”

Ray Parks (5612)

“This provides adversaries anywhere in the world with potential access to control systems running key industrial processes like refineries,” Ben says.

Entering either through the Internet or by hacking into a local wireless network, once on the business network an adversary can compromise a computer and learn about the business and its connected networks.

“We wanted to show how someone can get from the outside all the way in through the business network down through the control system and affect a piece of equipment in the field,” says Ray Parks (5612), who led the development of the scenarios. In this role, Ray used his background as a member of Sandia’s cyber red team, which has performed numerous vulnerability assessments of oil and gas and other critical infrastructure facilities.

The second scenario showed how someone can gain physical access to the process control systems from a remote, often unmanned, field site such as a pipeline flow meter. Each pipeline has flow meters at regular intervals to measure the flow of oil or gas.

“By breaching the physical security at a field site, an adversary could potentially then gain access to the control systems network by simply plugging in their laptop,” Ben says. “Once on the control systems network, they could once again disrupt operations, or depending on their intent, they could use the access gained at the remote field site to begin navigating to other corporate networks, potentially even the business network.”

Sandia team effort

In addition to Ben and Ray, the Sandia team includes Weston Henry (5612), John Herzer (5634), and Bryan Richardson (5615).

A major focus of the project involved developing and implementing a realistic test environment at Sandia that would mimic the real system configurations typically found in the oil and gas industry. LOGIIC industry team members either donated or loaned most of the hardware and software required to set up the Sandia test bed. Bryan led this task, coordinating with the process control and network security hardware and software vendors involved in the project to get the test bed components delivered, installed, and configured for the project.

John led subsequent work involving the integration and demonstration of a commercial event correlation technology to help process control system operators identify and deal with cyber-security threats.

“Event correlation allows us to collect events such as messages and log entries from many different devices on the network and infer the relationships among them,” John says. “Identifying the connections among many disparate events coming into the control center allows us to filter out much of the noise, identify significant patterns, and ultimately provide the big security picture to the plant operators.”

Weston implemented the attack scenarios developed by Ray, adapting publicly available attack tools and scripting the attack scenarios, which were then executed in the test bed to evaluate the effectiveness of the monitoring and correlation solution framework.

“In LOGIIC, we were able to access industry knowledge that we don’t get from our brief site visits or assessments,” Ray says. “We were able to see the kind of detailed knowledge on how they really work, how their business processes actually happen, the shortcuts they take, what they really put together. With that information, we were able to build a much better test and a better prototype system.”

Sandians pitch in for annual back-to-school supplies drive



PUTTING A WRAP ON IT — Sam Bono of Community Involvement Dept. 3652 packs school supplies donated by Sandians. The Office Professionals’ Quality Council and Community Involvement thank those who donated the supplies and funds. Because of their participation, Sandia was able to provide school supplies to nine schools and two non-profit agencies.

Solar tower testing supports future NASA missions

By Stephanie Holinka

Sandians looking skyward towards the solar tower received a bright surprise in the first week of September. NASA's dramatic tests produced bright light, smoke, and some flames while conducting materials tests crucial to the next generation of spacecraft.

These tests continue the testing that NASA began last year. NASA's tests are the first conducted at the top of the solar tower, where NASA contractors built special facilities designed specifically for these experiments.

NASA researchers mounted samples of advanced ablative materials on special arms on top of the solar tower and exposed them to concentrated solar radiation. Researchers tested 12" x 12" samples of an "advanced charring ablator," pieces of heat shield that NASA hopes to include as part of a new advanced ther-



FLAME rises from material as it is superheated by the tightly focused beam produced by the solar tower's heliostat field. (Photo by Randy Montoya)

mal protection system for aerocapture flight maneuvers, a system that NASA officials hope will save on future mission fuel costs.

The tests exposed the ablator samples to solar power levels up to 1,500 watts per square centimeter — approximately 1,500 times the intensity of the sun on Earth on a clear day. This energy simulates the high heat encountered during the aerocapture maneuver's hypersonic flight through an atmosphere.

Cheryl Ghanbari (6218), test engineer at the solar tower, subjected the shield material to a 3,500 F solar light from the Labs' Solar Thermal Test Facility onto sample materials.

Cheryl and her team controlled the exposure duration by using preprogrammed heliostat movement, and controlled intensity by the number of heliostats used for each test. They monitored radiation flux, or the intensity of the solar energy, using a radiometer that is exposed before and after each test.

The tests helped determine the overall effectiveness of advanced thermal protection systems, adhesives, and structure combinations for a future rigid aeroshell system.

Aeroshells are protective cases that surround some types of spacecraft. Advanced aeroshell structures and adhesives allow reduced mass for the aeroshell system, allowing more science instruments or smaller launch vehicles.

The aeroshell system and thermal protection system being studied during this series of tests are

similar to those developed for past Venus, Mars, Jupiter, and Earth-return missions. In January 2005, a rigid aeroshell system delivered the entry probe *Huygens* into the atmosphere of Saturn's largest moon, Titan, as part of a mission jointly conducted by NASA, the European Space Agency, and the Italian space agency, Agenzia Spaziale Italiana.

NASA and its contractors were pleased with the tests. "It's worked beautifully," said Bill Congdon, manager of ARA Ablatives Laboratory into his radio after the first set of tests went better than planned. Perfect weather and expert execution allowed them to test more samples than planned. ARA, based in Colorado, makes the materials under contract to NASA. "Our goal in this test was to make sure it didn't come apart."

More than 100 similar tests on samples ranging from 5-inch diameter coupons to panels up to 24 inches square have been conducted during the last three years.

Bonnie James, program manager for NASA, says Sandia's Solar Thermal Test Facility is the only place in the country where NASA can test objects of this size under such intense heat. The project planners had evaluated heat-producing facilities all over the country, including the NASA Ames facility, but determined it was difficult to find facilities that could test things "larger than a coupon," a much smaller sample than this test required.

"This is a very unique facility with very unique capabilities," James says.

Inter-Institutional Agreement wins 2006 Deal of Distinction Award

By Chris Burroughs

A new and easier method to quickly put together intellectual property bundles for licensing has won Sandia, Los Alamos National Laboratory, and the Science and Technology Corp. at the University of New Mexico the 2006 Deal of Distinction Award given by the Licensing Executives Society of USA and Canada.

"This is a major technology transfer award," says Paul Smith (9104), the Sandia licensing executive who negotiated with the other two entities to make the agreement possible. "We are very happy to receive the award and proud of the agreement that simplifies tech transfer."

The award was presented this week during the 2006 annual meeting of the Licensing Executives Society in New York City. Five other teams will also be honored with Deal of Distinction Awards.

Paul says the license agreement, called the Inter-Institutional Agreement (IIA), is a contractual framework that facilitates the creation of patent bundles, the nonexclusive licensing of these bundles, and the distribution of licensing revenue and equity. It also requires the identifica-

tion of an organization to lead the negotiations so that partners/licensees have straightforward access to the patent bundle.

Inspired by the Technology Research Collaborative and Technology Ventures Corp., it is also designed for other research organizations to join in the arrangement.

"The flexibility and capability of this agreement give it great power and the potential to create both economic benefits for the region and technological advances that will strengthen the US," Paul says.

The IIA was originally signed by Sandia, Los Alamos, and Science and Technology Corp. in January 2005. A public signing of the agreement was held the following month at the New Mexico Capitol, attended by Gov. Bill Richardson and Senators Pete Domenici, and Jeff Bingaman. Also signing at the public ceremony were New Mexico State University, New Mexico Institute of Mining and Technology, the MIND Institute, and the National Center for Genome Resources.

"The IIA is important because it is politically popular, makes life easier for everyone, is flexible, and will evolve as needed," Paul says. "Most importantly, it's a good chance to leverage technologies developed in New Mexico."

Manager promotions

New Mexico

Carrie Neugebauer from PMTS, Product Delivery Value Streams Dept. 2710, to manager Product Tester Value Stream Dept. 2717.

Carrie joined Sandia in 1978 and has served as the manager of Engineering Tools and Services Center 2900. She also has earned a Lean Six Sigma Black Belt certification in support of the Neutron Generator Product Delivery Value Stream & Responsive Infrastructure.

Carrie received her associate's degree in mechanical engineering technology from Penn State University.

Al Lucero from PMLS, 4000 and 6900 Procurement Dept. 10245, to manager 5000/1600 Procurement Support Dept. 10241.

Al's 16 years as a contracting specialist have spanned the procurement areas of R&D, construction, manufacturing and concurrent design and manufacturing, and international procurement.

Prior to joining Sandia in 1990, Al worked for a national optical company as a dispensing optician and manager in Las Vegas, Nev. He then moved to Miami, Fla., to head up a new operation as area manager, headquartered at the Bascom Palmer Eye Institute. By the time he left six years later, he had developed the area into six retail operations.

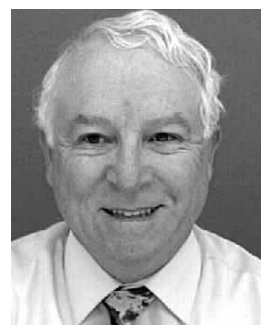
Al received his BBA from the University of New Mexico and his MBA from the College of Santa Fe.

Sympathy

To Annie Webb (5431) on the loss of her sister, Rachel Williams, on Sept. 9 in Oakland, Calif.



CARRIE NEUGEBAUER



AL LUCERO



NOW THAT'S A PUMPKIN — Anna Schauer, manager of Strategic Planning and Studies Dept. 12117, pauses for a moment for a photograph before taking her pumpkin to the New Mexico State Fair. Anna, who has entered pumpkins in previous years, was confident that this year she had a winner. When the fair pumpkin judging took place on the first weekend of the fair, Anna's pumpkin took second place. She says she plans to try again next year.

(Photo by Michelle Fleming)

Mileposts

New Mexico photos by Michelle Fleming
California photos by Bud Pelletier



Douglas Smathers
40 5612



Dwight Soria
40 8513

Recent Retirees



Bill Hobson
25 8243



Gary Romero
35 10244



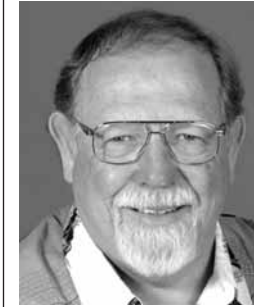
Charles Warren
35 5356



Brett Bedeaux
30 5924



Carla Chirigos
30 2024



Bud Pelletier
23 8528



Jeffrey Morgan
20 2663



Demecio Edwell
30 6422



Allen Lappin
30 6117



Kevin Carbiener
25 8229



Wen Hsu
25 8368



Lawrence Shapnek
25 5434

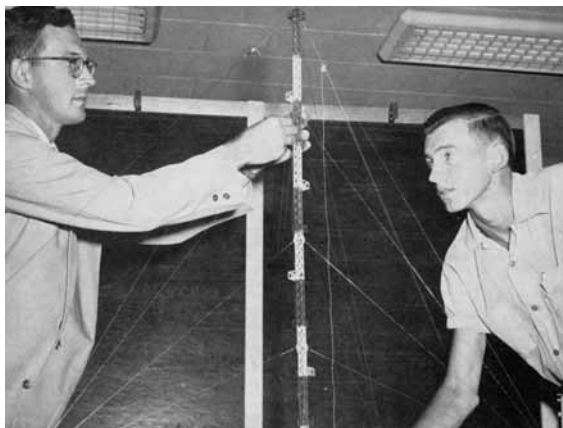


Barbara Surbey
25 232



50 years ago . . . "Sandia's Job Vital to American Security" was the theme of Sandia Corporation's first-ever exhibit at the New Mexico State Fair held Sept. 29-Oct. 7, 1956.

Calling attention to the Sandia exhibit at the north end of the Midway was a very large balloon moored to a truck near the Dairy Building. The truck housed various instruments to determine the ruggedness of the balloon's bottom shroud while in the air. Exhibits included working models with sound effects of Area 3 test facilities, including the centrifuge, the drop tower, and rocket sled; a scale model of a tower and blast line at the Nevada Test Site; unclassified electronic equipment used in research and development; a wall mural about the steps of weapon development; and a continuous-operation movie projector with a built-in screen showing a fireball and mushroom cloud sequence from nuclear test series color movies.



A SCALE MODEL DROP TOWER display was prepared for the 1956 New Mexico State Fair. The model simulated the action of the original tower.



SHOCK PULSE COMPUTER — R. S. Jacobson demonstrates the slide rule he designed to aid engineers and test technicians in computing mechanical shock test parameters.

40 years ago . . . Thanks to Sandia/Livermore test engineer Richard S. Jacobsen, the time-consuming and sometimes complicated task of determining mechanical shock-test parameters was reduced to a relatively simple series of operations on a special slide rule. Dick conceived the idea for the Shock Pulse Computer after compiling a series of nomographs outlining shock-test ranges during a survey of SCLL's shock-test equipment. He theorized that if several graphs could be reduced to numerical scales, they could be combined in a slide-rule format for convenience and flexibility. The computer sold for \$1.95.



Charles Townsend
25 5423



Marty Mikolajczyk
20 8945



Mabel Pecos
15 2434

30 years ago . . . A Sandia team was conducting a word processing feasibility study and looking at word processing as it might be employed for administrative/secretarial word processing. Because of cost, it was contemplated that several rather than individual departments (then known as divisions) were to share one or more word processors. A variety of word processing units were available on the market but few could "talk" to each other and WP operator training was different for each. Sandia boasted seven WP stand-alone units (and four different models), which could cost \$10,000 to \$20,000 per unit.



WORD PROCESSING IN THE BEGINNING — LaVerne Keyonnie of Design Information Division watches the cathode ray tube screen as she types specifications.



SOUVENIRS of two working days on the USS *Nimitz* for Lee Bray and LeRoy Sparks are two caps. CVN-68 stands for Carrier Vessel, Nuclear-powered. The *Nimitz* is the 68th in a series of US aircraft carriers.

20 years ago . . . Two Sandians were taking soundings on board the giant aircraft carrier USS *Nimitz*. Sandia Executive VP Lee Bray and LeRoy Sparks, Stockpile Evaluation Department, along with 42 naval inspectors, had the opportunity to observe the loading and launching of aircraft with Sandia-developed weapons aboard. The Navy loaded two JTA (Joint Test Assembly) bombs aboard A6 and A7 aircraft that flew out to the test range at Eglin AFB and dropped them at intended targets. Lee and LeRoy were on board to observe the early life cycle of the two bomb systems. Another Sandian, Bob Lowery, was at the test range to observe the drop test and collect data on the target impact and JTA recovery.

— Janet Carpenter

'Mama Kindy, Mama Kindy!' Honduras village welcomes Healing the Children foster parents

(Note: I was at a meeting with Lenny Martinez this summer where he talked about a recent trip to Honduras. I immediately thought it would be a good Lab News story about how each one of us can make a real difference. Lenny was reluctant — he wasn't seeking any kudos — but agreed when I told him the story would help set the stage for this year's ECP campaign, of which he has always been a champion. — Iris Aboytes)

By Iris Aboytes

VP Lenny Martinez (9000) and his wife Kindra (Kindy) could have gone to Spain on their vacation, but they decided to go to Honduras to visit two of their Healing the Children foster children instead.

Healing the Children (HTC) is a non-profit, volunteer organization dedicated to healing children around the world. HTC brings to the US children who need medical attention, finds medical professionals who donate their services, and assigns each child to a volunteer host family to provide room, board, and love for the duration of the child's stay.

Seven years, four foster children

Lenny and Kindy have been foster parents to four children over the past seven years. Their vacation time was spent caring for the children — "a great investment," they say.

Lucy came from Honduras when she was four years old. She had a hole in her heart. "When Lucy arrived at the airport, she was scared to death," says Lenny. "It took weeks to earn her confidence, but Kindy and our son José won her over. Lucy became a fully functional member of our family. She loved chicken nuggets and the dogs, and could sing out-of-tune with the best of us.



"MAMA KINDY" Martinez and husband Lenny receive a heartwarming welcome at the airport in Honduras. (Photo courtesy of Lenny Martinez.)

"She was incredible," says Lenny. "She had spent a majority of her early life in intensive care. Her body had been starved for oxygenated blood all her life, and its response to a functioning heart was positive. Lucy's recovery after surgery to repair the hole was unbelievable."

She went home with Lenny and Kindy in just four days.

First surgery bought some time

Nelson, also from Honduras, lived with Lenny and his family on three separate occasions. His first visit was when he was four months old. He had four heart defects. The first surgery bought Nelson two to three years, but he had to return for permanent treatment. He went back home after four months and returned two years later for the additional surgery. Complications

required another surgery last year. "He is seven years old, loves soccer, goes to school, and has perpetual energy," says Lenny.

Lenny and Kindy went to Honduras because of a promise made to Lucy's mother. Kindy had promised her that if she had another baby they would go see her.

Lucy and Nelson's families were at the airport to meet them. "Arrival at the airport was overwhelming," says Lenny. "Nelson had beautiful flowers for Kindy; Lucy gave her a simple napkin filled with little candies tied with a string."

'Like a little mountain goat'

"Most homes in the little village are built on the hillside. Everybody knew who we were," says Lenny. "Lucy was like a little mountain goat. We followed her up the hillside as people came out of their homes saying, 'Mama Kindy, Mama Kindy.' It was unbelievable. Because of Lucy the entire little village knew Mama Kindy."

Several families live in buildings separated only by curtains. Each little partition has its own hot plate. This area is the poorest of the poor.

"We were able to visit the schools where the two children attended and visit with their families," says Lenny. "It was wonderful to see how well they are doing."

Lenny and Kindy tried to keep the time of their return home quiet to avoid having a big send-off, but when they got to the airport, 30 to 40 people were there to see them board the plane and say goodbye.

Had Lenny and Kindy gone on a traditional vacation, they would not have seen the little "mountain goat" who once had a hole in her heart or the little boy who had four heart defects. They went to visit two healthy children who had hugs for Mama Kindy.

Fiesta de Vida is one of several Hispanic Heritage Month celebrations

By Iris Aboytes

Dr. Seuss, the beloved children's author, said unless someone like you cares a whole awful lot, nothing is going to get better. Sandia's 10000 Division Diversity Council is holding a Fiesta de Vida (Celebration of Life) Blood Drive because it cares a whole awful lot.

The Fiesta will be held Sept. 21, 8 a.m.-1 p.m., north of Bldg. 800. This is in addition to the blood drives scheduled for September. United Blood Services is sending its bus with four phlebotomists.

"We wanted to do something special for our community during Hispanic Heritage Month that would be a celebration for everyone," says Lily Marquez (10224). "Our neighbors' needs are great. We could all be future receivers. If you have never donated, now is a good time to start."

As Executive VP John Stichman noted in a memo to employees: "Please do not assume that because you have a health issue, take medication regularly, have piercings or tattoos, or if you've gone out of the country on travel, that you are deferred from ever donating. Take time to find

out by calling United Blood Services at 843-6227."

It takes 320 donations every day to meet patient needs in New Mexico. United Blood Services is the only community blood program serving New Mexico's 42 hospitals and patients around the state.

By the end of July last year, Sandians had donated 656 units. This year 619 units have been donated.

Why donate? It is the gift of life. This gift does not depend on your income or background. It is easy and effortless. You will not miss it, and you will get it back. Did you know that by law, hospital patients may only receive

blood from volunteer donors?

"A young mother of three recently developed a clotting factor disorder and required over 100 units (pints) of blood in less than 24 hours," said Evelyn Bryant, United Blood Services.

"Medical professionals and her family's prayers could only do so much. Had the blood not been available she would have bled to death. Today she is a vital part of her family's life."

Biscochitos will be offered in addition to the traditional United Blood Services snacks. What a deal! You walk out of the bus with a spring in your step, and you eat a high-calorie snack without feeling guilty. Just think how long it took you to lose a pound. You step out of the bus and you are a pound lighter.

All that, and you leave the bus hearing a statement that is music to your ears — "make your next meal a hearty one, and no strenuous exercise for the next 24 hours."

¡Que Viva la Fiesta!



DID YOU KNOW . . .

. . . that, according to United Blood Services

- Just three teaspoons of blood can save a baby's life.
- It takes one donation (pint) to save three lives.
- Every three seconds someone needs blood.
- O positive is the universal donor; it can be given to patients with any blood type.

What! We're not number 1?

Donations to United Blood Services from January to July 2006

The Community of Los Alamos (includes LANL)	741 units
Sandia	619 units
Intel	565 units

Hispanic Heritage Month activities scheduled

Kirtland Air Force Base and Sandia will be partnering in the following Hispanic Heritage Month activities:

- **Sept. 15, 7 a.m. -1 p.m.** — Salsa Night, Rio Grande Community Center, featuring NY Louie & Friends, DJ Tuñón, and Lark, the Salsa Instructor. (Food will be served) Call Lily Marquez at 844-3075 for your \$8 ticket. * * *
- **Sept. 21, 11:30 a.m.-1 p.m.** — Hispanic Luncheon, Mountain View Club, with guest speaker Frank Leto and the Odara Dance Group, \$8 for club members, \$10 for non-members. * * *
- **Sept. 25, 11 a.m.-1 p.m.** — Entertainment Day, Steve Schiff Auditorium (dancers, salsa contest, food, and music) * * *
- **Oct. 4** — Piñata party, Boys and Girls Club. Organizations will compete in a donated Piñata Contest. For more information, contact Becky Auringer at 846-2411