FESTIVAL OF LIGHTS — Traditional New Mexico luminarias lend a soft glow to Albuquerque's Old Town Plaza in this Dec. 7 photo by *Lab News* photographer Randy Montoya. Results of this year's ECP/LEAP campaign are reported on **page 3,** and a wrap-up story about holiday giving by Sandia employees begins on **page 12.**

Sandia LabNews

Vol. 53, No. 25 **December 14, 2001**

Sandia National Laboratories

In these troubled times, the peacemaker's burden

In this unusual time in our nation's history, the Lab News *invited Labs President C. Paul Robinson to write a year-end, holiday message to employees. Here it is.*

By C. Paul Robinson

As we approach the holidays and the New Year, it is still painful to reflect on the past year. The first nine months of 2001 were forever eclipsed by the events of September 11 and our continuing response to those tragic and despicable acts. The attacks on the World Trade Center and the Pentagon will stand perhaps as the most significant events of our adult lives, and we can pray that for our children there will be no worse events in their lifetimes.

The attacks on American soil — with such an incalculable toll in human misery — have forever recalibrated Americans' views as to the importance of defense and security. As we make our plans for the holiday shutdown, the significance of taking "time for family" should have a priority in our lives as never before. Reevaluating the tenuous nature of human life, which these events have so clearly forced upon us, makes us want to hold on even tighter to those who are most important in our lives.

I hope each of you will have a more meaningful holiday break than ever before. In such matters there is no debate — no matter what God we recognize or what religion we embrace — all acknowledge the peacemaker's burden as a most heavy one. This burden is still too disproportionately borne by our young people. Thus as we embrace our own loved ones during this holiday period, let us all be concerned with the safety and well-being of those who are engaged in preserving freedom around the world. For those of you with sons or daughters serving in the military, take heart that we will all be joining with you in prayers for their safekeeping.

We can all look forward to the New Year for the opportunities it will bring for us to make our own special contributions in helping our nation secure a peaceful and free world. We have already made some substantial contributions to help solve the anthrax problem, and we have provided a better means of detecting nuclear, biological, and chemical agents. We have also contributed better means to blunt or disinfect such weapons.

The New Year will require more of us — in stretching our minds and our abilities to anticipate what threats might yet be directed at our nation and in developing effective and timely means of nullifying their destructive potential. We must also help delineate "system solutions" that can help prevent, as well as deal with, such conflicts in the future.

Streamlined NNSA management model to be piloted at Sandia

Simplifying lines of authority, developing common-sense oversight

By Rod Geer

An increasing number of Sandians are spending time responding to an opportunity — presented provisionally by NNSA and supported by DOE's Albuquerque Operations Office — to develop a new way of carrying out the Labs' business.

The plan is expected to be piloted at Sandia. A formal tasking memo is expected from NNSA soon.

"This effort is intended to simplify lines of authority . . . and allow Sandia to exercise management authority and leadership in accordance with best business practices," says Susan Pickering (7030), one of the pilot's team members.

The 'new' Division 7000

Leading design and implementation of the pilot into the Labs workaday world by next spring is the "new" organization 7000 — called the Integrated Enabling Services Division — which was born on Oct. 1. Led by VP Lynn Jones, the division, which has only 13 full-time members, has been chartered — as a message on its web homepage reads — to "enable Sandia's mission work to flourish by providing a great work environment to enable people's performance each and every day and providing a governance system that enables great work and ensures effective risk management."

Rick Glass, manager of DOE's Albuquerque Operations Office, in a letter last week to all AL employees throughout the country, said the

(Continued on page 4)

High-temp electronics

Researchers Joe Henfling and Randy Normann have turned electronics into a hot technology. See story on **page 5.**

This & That

Stealing away — Writing this column for more than a dozen years has been a little bit like stealing. Some people never get to have this much fun on the job and get paid for it, but I'm in the process of taking on new duties that make it impractical for me to continue writing columns on a regular basis. So, beginning with the next issue, my colleague Howard Kercheval will write in this space.

This doesn't mean you are through with me forever, though. I told Howard and Editor Ken Frazier that I'll try to find time to fill in for Howard some when he is away on one of his gambling junkets, rehabilitation trips, continuing anger-management sessions, or one of the several mysterious trips he takes each year to "visit his niece."

* * *

I thought "E" was for Enlightenment — Sandia/California's Steve Hurd (8910) was amused by how a piece of mail was addressed to him in Livermore a while back: "Steve Hurd, Sandia National Laboratories, 7011 East Avenue, U.S. Department of Enemy ..." Steve and I aren't sure whether our DOE friends will be similarly amused, but probably more so than if the "y" in Enemy instead had been an "a."

* * *

Mint tea, sí. Mentee, no. — I sure like mint tea, but I just can't swallow the made-up word "mentee" to designate the recipient of mentoring. Russ Walker (2544) says he is hearing more and more Sandians use "mentee." Neither one of us can find it in any of our dictionaries, and we don't need it. There's already a perfectly good word designating a recipient of mentoring: it's protégé.

* * *

Big raises make you mad? — Retiree Jack Tischhauser sent a note after reading the "performance review profundities" item in a recent column. A 36-year man who left in 1988, Jack noted some "profound remarks" made long ago by W.C. Scrivner, who retired in 1978 after serving more than 30 years in various technical and administrative positions, including personnel director and computing director. Jack says W.C. was fond of saying if you got a big raise you should be mad, because you haven't been getting paid what you are worth. If you got a small or zero raise, you should be happy, because you have been getting paid what you are worth.

* * *

Next issue Jan. 11 — It's that time again when the *Lab News* interrupts its regular biweekly publication schedule to adjust for the end-of-year holiday break. Our next issue will be published Friday, Jan. 11. The deadline for classified ads and news is noon, Jan. 4.

* * *

"Feed" Howard — As Howard Kercheval takes on the column-writing duties (see top item), I hope you'll send your amusing stories and column ideas to him, as you have to me. Howard plans to continue having some fun in this space, as I've tried to do over the years. The interesting stories and ideas from readers make for some of the best column items.

— Larry Perrine (845-8511, MS 0165, lgperri@sandia.gov)

Sandia LabNews

Sandia National Laboratories

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LOCKHEED MARTIN

Mike Cieslak named director of Materials & Process Sciences

VP 1000 Al Romig last week announced the selection of Mike Cieslak as Director of Materials & Process Sciences Center 1800, effective Dec. 7.

Mike earned his PhD in Materials Engineering from Rensselaer Polytechnic Institute. He was hired by Sandia in 1983 in the Process Metallurgy Department and is currently the Deputy Director of Operations and Planning Center 1800.

Mike's contributions to Sandia include assignments as a Senior Manager in the Advanced Concepts Group; AAAS Congressional Science Fellow/Legislative Fellow for Sen. Jeff Bingaman; Deputy Director for Long Range Planning for the Materials and Process Sciences Center; Program Manager in the ADAPT (Advanced Design and Production Technologies) Initiative Office; and manager/supervisor of the Direct Fabrication Technologies Department, Physical and Joining Metallurgy Department, and Physical Metallurgy Department.

Still no word on proposed retirement plan changes

As of Wednesday morning, Dec. 12, the Department of Energy had not provided a formal response on Sandia's proposed Retirement Income Plan changes, according to Ralph Bonner, Director of Center 10300. Because this is the last *Lab News* before the holiday break, any related news that becomes available before the break would be announced via Labs-wide voicemail messages and in a *Sandia Daily News* extra. Details would appear in the next *Lab News*.

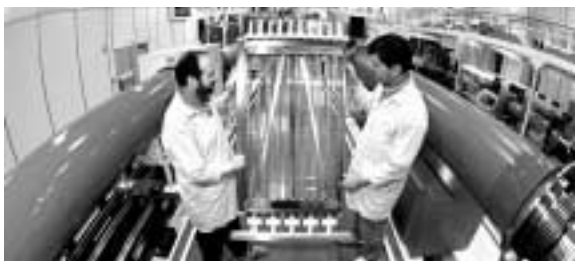
Z-Beamlet laser to be dedicated Dec. 15

By Neal Singer

A celebration of the reconstruction and modernization of the world's third largest laser, Z-Beamlet, will be held Saturday, Dec. 15, from 10 to 11:30 a.m. in Area 4. The laser, by proximity and through dedicated entry channels, has been technologically married to the world's most powerful X-ray facility, Sandia's Z machine, and functions as a major addition to its operations. Expected to attend are Senators Pete Domenici, R-N.M., and Jeff Bingaman, D-N.M., and Rep. Heather Wilson, R-N.M. Z and ZBL facilities (building 983/986 in uncleared part of Area 4) will be open for self-guided tours from 11:30 a.m. to 1 pm following the dedication ceremony. Badged employees are invited to attend.

Not far below the surface of the event are researcher hopes for improvements in stockpile stewardship evaluations and material properties research, as well as progress toward high-yield nuclear fusion. These may be generated by equipment installations expected to begin this fiscal year in both machines.

The Z-Beamlet laser is a reconstructed, upgraded version of Lawrence Livermore National Laboratory's former Beamlet laser. With New Mexican thrift — somehow reminiscent of the tendency of pioneers to save string — Sandia researchers



Z-BEAMLET laser (Photo by Randy Montoya)

teamed with partners from LLNL to haul the disassembled Livermore laser — slated there for the junk pile — to Sandia, where it was re-assembled over a two-year period, says project lead John Porter (1673). Its first outing — as researchers held their breath to see if it would work or implode — made use of the giant laser's superior power and focusing properties to successfully image the symmetrical shrinking of a dummy deuterium pellet under X-rays produced by Sandia's Z machine. The ability to symmetrically shrink a pellet is a necessary precondition in creating a nuclear fusion reaction.

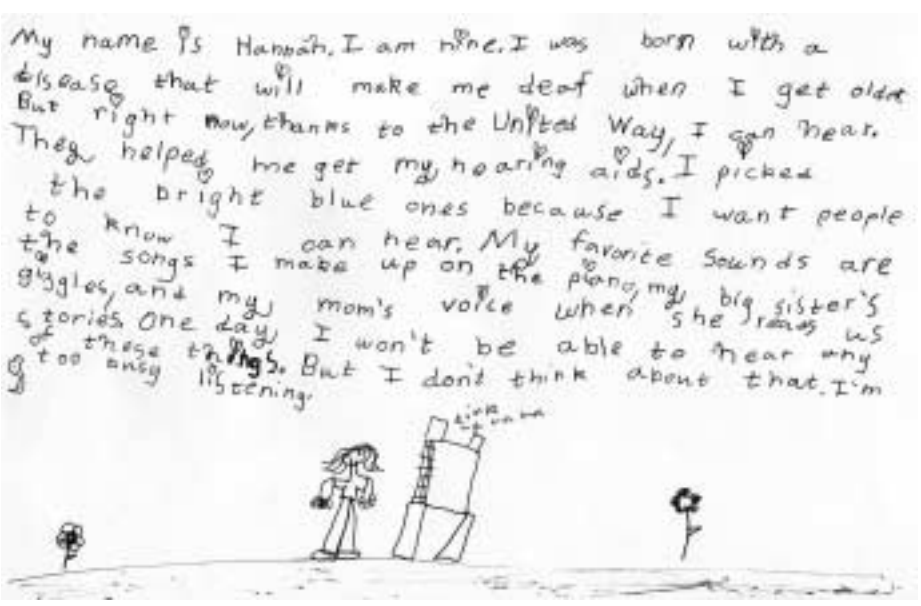
This year, Z-Beamlet, with $3 million of an expected $30 million expenditure, will begin the transition to a petawatt laser. A peta is a 1 followed by 15 zeros. This will make the laser three orders of magnitude faster in delivering the same amount of energy, thus boosting its power a thousandfold. The laser then will be able not only to observe but also to act. One function will be to serve as a kind of spark plug, heating a small region of the fuel precompressed by Z's X-rays to initiate what eventually may be a nuclear burn.

The Z machine, in addition to providing data for the nuclear stockpile and basic materials research — tasks for which it is currently oversubscribed by researchers from many laboratories — has long been thought to embody a technique that could bring control of high-yield nuclear fusion, with its promise of unlimited energy from sea water. A major change in target configuration six years ago brought the machine's output from 40 terawatts to 230 terawatts — about a quarter the output needed for fusion — in little more than a year.

This year, DOE has allotted $10 million of a $60 million expected total to renovate the 15-year-old Z machine with new Marx generators — the giant capacitors that store electricity fired in each shot. The improved capacity is expected to ultimately increase the machine's power output by approximately 50 percent, says Jeff Quintenz (1600), Director of Sandia's Pulsed Power Sciences Center. An added bonus will be the ability of researchers to fire the machine twice as often — 400 times a year instead of 200, says ICF Program Manager Keith Matzen (1670), allowing the machine to better accommodate user requests.

In a fusion process, Z's X-rays act as heat in an oven, in the attempt to "cook" — symmetrically compress — a bb-sized deuterium-tritium pellet to the point at which its atoms fuse and release energy.

LEAP/ECP campaigns: Sandians commit largest amount ever — $2,181,455



"HANNAH," shown here in a reproduction of two pages of the 2001 campaign brochure for United Way of Central New Mexico, reminds Sandians of what their charitable giving means to the community each year. For the 2001 LEAP and ECP campaigns, Sandians topped the $2 million mark for the second year in a row.

The ECP/United Way of Central NM/LEAP thanks you! Sandians have done it again to the tune of $2,181,455. The most ever given in any year. Last year's total was $2,127,010.

How did Sandians in Albuquerque, Livermore, Amarillo, Las Vegas, Carlsbad, and Washington, D.C., reach that amount? It was the retirees, who in their hearts will always be Sandians. It was the contractors, who chose to be a part of us. It was the students who dared to participate — on their limited budgets. It was the mailroom staff, who despite the anthrax threat weighing heavily on their minds, reached 100 percent participation.

"Through your generosity and kindness we will be able to feed the hungry, furnish wheelchairs to the disabled and hearing aids to the hearing impaired, provide specialized trauma recovery services for families, teach children how to read and write, provide shelter in crisis situations. In short, we will help our community become a better place," says Paul Yourick (3120), who headed this year's committee.

Behind the scenes were Sandia Center ECP and LEAP representatives, who used their imaginations in reminding Sandians they are needed by our community. Working for months before the campaign began were Sandians in payroll and programmers initiating a system that is user friendly.

Preparation for the campaign in New Mexico began last year by the ECP committee spearheaded by Paul. Juanita Sanchez (12660), who has been the ECP administrator for many years, gets the training set up, schedules agency tours, lines up ECP representatives, organizes the Book Fair, and much more. Mike McClafferty, last year's chairman, was an integral part of the committee, spending more than 150 hours in ECP activities and being by his own words "the 'chief beggar' for the Corporation."

Someone once said there are people who make things happen, those who watch what happens, and those who wonder what happened. How wonderful it is to belong to a community that makes things happen — all the time.

— *Iris Aboytes*

Holiday giving

(Continued from page 12)

"Stockpile Resources Center 2900 has been doing holiday giving now for 43 years — of course the org. number has changed many times, but not the spirit of this center," says Larry Friday. "Our center started this tradition working with church groups to identify needy families where we would collect canned goods much like the Roadrunner does today. We would also collect donations to purchase turkeys or hams. This, however, became a real problem — some families didn't have a refrigerator or a stove. Plus, it really didn't get to the little ones who could use a gift for them personally.

"We changed our collections to monetary donations for food certificates and we collect good used and new toys for the children of these families. Public school counselors identify the most needy families at their schools.

"We set up a gift tree with the first name and age of the children of these families. This is in addition to the food certificates.

"Our drive runs for about two-and-a-half weeks [Nov. 26 through Dec. 13 this year]. Volunteers wrap and deliver the packages. The heartwarming stories of the deliveries would fill a page alone, as well as all the past articles and thank-you cards we have gotten in return. Our center employees have really come through with their time and spirit of giving."

DAZZLED BY THE LIGHT — A young child is enchanted by the lights at Albuquerque's famous "Bugg House." (Photo by Randy Montoya)

"The OPQC (Office Professional's Quality Council) Community Outreach Team teamed with Darlene Leonard (12650) and the Corporate Outreach Department to coordinate Sandia's 2nd annual Roadrunner Foodbank Drive Nov. 1-15," says Kristy Savage (3000). "Because of Sandia's heightened security, we were prohibited from conducting the drive on KAFB and in Sandia buildings. We partnered with the **Sandia Labs Federal Credit Union** and the **National Atomic Museum's** "Up N' Atom" store at Winrock Shopping Center to place barrels at the two off-base credit unions and the Winrock store. As of Nov. 15, we had collected 1,170 pounds of food. The barrels will remain in place through the holiday season for additional donations."

This year Roadrunner's "Food for Kids" program established food pantries in selected public schools. New Mexico leads the nation with 15.1 percent of its people not sure about where their next meal is coming from on a regular basis, and many people, including thousands of children, risk being hungry every day.

Employees around the Labs form committees or work alone, but the results are the same — sharing what they have with others or finding ways to make someone's day a little brighter.

Labs makes two new security tools available to dam and power transmission system owners

Operators of US dams, hydroelectric facilities, and power transmission systems now can use two new step-by-step security risk assessment processes developed at Sandia to make their sites less attractive targets to terrorists.

RAM-D℠ for "Risk Assessment Methodology for Dams" is now available to owners of the nation's 75,000 dams. The methodology provides a formal, scientifically validated process for evaluating and improving the security of any dam.

Sandia developed RAM-D in cooperation with the Interagency Forum on Infrastructure Protection (IFIP), a team of dam owners, transmission system operators, and antiterrorism experts. IFIP accepted the methodology late last year following a two-year development and validation process that included trial security assessments of four actual dams (*Lab News*, Aug. 11, 2000).

The RAM-T℠ "Risk Assessment Methodology for Transmission" is currently being finalized and is expected to be released in January to electricity transmission system owners. To develop RAM-T Sandia and IFIP also conducted a trial assessment on a major regional transmission system.

Both methodologies take owners, operators, and security managers of dams and transmission systems through a magnifying-glass examination of each facility's unique risk situation — its potential adversaries, vulnerabilities, consequences of attack, and existing security measures — then provides cost-benefit analyses of possible security upgrades.

"This is much more than a checklist," says Rudy Matalucci (5862), Sandia RAM-D and RAM-T project leader. "It begins with the events you don't want to happen, identifies who might want to do it and what their resources are, and quantifies how much risk reduction you get with each given upgrade. It is a way to help facility owners make decisions about how to balance the need for security with other considerations."

Rudy has spent the last few weeks conducting RAM-D training workshops for US Army Corps of Engineers dam operations personnel.

Each methodology is contained on a compact disk and in two inch-thick manuals.

IFIP includes the FBI, US Army Corps of Engineers, Bonneville Power Administration, US Bureau of Reclamation, Sandia National Laboratories, Lawrence Livermore National Laboratory, Southwestern Power Administration, Western Area Power Administration, and others.

— John German

Governance

(Continued from page 1)

NNSA pilot plan at Sandia "will attempt to develop an achievable option to move back toward a relationship where the government determines what is needed from Sandia, and allow the leadership of Sandia to decide how to best accomplish that work."

"The goal of the program," Rick continued, "is to develop a common-sense governance system that builds trust and accountability, enables good decisions and great work, effectively manages risk, and saves time and money."

Historical context

Providing some historical context, his letter further explained that the Manhattan Project, and later the AEC, set up the atomic weapons program based on the philosophy that the best organizations in the US academic and industry communities should operate the national security labs. "The Navy used the same philosophy when setting up the nuclear propulsion program. The government asked organizations like the University of California, AT&T, DuPont, Westinghouse, and General Electric to build and operate facilities needed for these programs," he wrote.

"Over the years, the government has gradually exerted more and more control over the operation of all the facilities and activities. I believe we have reached the point where the government controls operations of our M&O contractors so tightly that we defeat much of the original purpose of the M&O contract."

"Over the years, the government has gradually exerted more and more control over the operation of all the facilities and activities."

So although the Labs is still awaiting official approval from the NNSA administrator, work leading to design of a new system has been moving along for several months. For example, managers and directors working in the "integrated enabling services" organizations of the Labs — groups like procurement and logistics, budget, auditing, benefits, HR, internal audits, public relations, information systems — have formed teams. These teams will carefully examine their organizations (called functional areas) and through systematic analyses identify operational risks they must manage or mitigate to best provide products and services to customers and constituents, whether internal or external.

Scouring external requirements

"For our purposes, risk is an uncertainty involving the possibility, through conducting our business, of harm or loss to Sandia," explains Curtis Johnson (7003), another principal in drafting the new approach to operations.

"That could be loss of business, loss of Sandians to other employers, financial liabilities, damaging the environment, harming our reputation, or ironically doing something that harms rather than protects national security," Curtis says. (See "Chime in on 'risks' " at right.)

The functional area teams also are scouring external requirements — DOE orders, federal acquisition requirements, Lockheed Martin corporate process statements, and even passages in the M&O contract for the operation of Sandia.

By doing this the teams will be able to identify which requirements could be eliminated because they do not improve the Labs efficiency or products or reduce operational risks. The teams — with the aid of peer reviews and external critiques — also will be able to create a listing of the "minimum set of laws, regulations, best practices, and standards to mitigate risk and thus serve as the foundation for a new system," Susan says.

"All of these activities, done at breakneck pace, and others still to come in 2002," Curtis says, "are aimed at achieving that vision Rick Glass has so clearly defined."

Paul Robinson responds to Bruce Tarter's resignation

Sandia President and Director C. Paul Robinson had the following to say about Bruce Tarter's resignation last week from his post as Director of Lawrence Livermore National Laboratory. Tarter reportedly will return to technical work at the lab.

"Bruce presided over a very turbulent time and a period of great challenge to DOE's nuclear weapons labs. He always conducted himself with dignity, character, and wit. The leadership of all three labs found better ways to team with each other and to address major national problems without parochialism. I will indeed miss Bruce as a part of this team.

"I have always considered it a sign of 'enlightened sanity' when a senior manager steps down from a stressful post in order to once again pursue technical work. Thus I congratulate Bruce on returning full-time to physics and I feel sure he will continue to make important contributions to the nation."

Chime in on 'risks'

As the web-based employee comment program "Your Thoughts Please" nears its first birthday it's offering Sandians a chance to comment about the risks the Labs assumes every day of operation.

The current question: *"Sandia is involved in a pilot project urged by NNSA leader Gen. Gordon to develop a common-sense governance system for the Labs. The vision is that this revamped system will build trust and accountability, enable good decisions and great work, save time and money, and effectively manage risk. A key early step is to identify risks that Sandia and its individual organizations assume in order to carry out their duties. First, with that in mind, what do you see as the biggest risks Sandia, as a whole, or your specific organization assume each day? Next — and very important — what are Sandia or your organization now forced to do that does not mitigate those risks?"*

The submission deadline is Jan. 4, 2002. The web site can be reached by going to the Newscenter page at http://www-irn.sandia.gov/newscenter/news-frames.html and then clicking on the "Your Thoughts Please" button near the top left of the page.

Also on the current "Your Thoughts Please" page are responses to the previous question: *"Most pundits, presidents, and just plain people say the September 11 terrorist attacks have changed the world. Where do you see Sandia heading in the next five years or so as a result?"*

Hot electronics could boost geothermal industry, earth sciences

Hi-temp electronics developed by Sandia researchers survive to 250°C and more

By Bill Murphy

It's a hot technology. Not pre-2000 dot.com hot, but *hot* hot.

Sandia researchers Joe Henfling and Randy Normann of Geothermal Research Dept. 6211 have developed high-temperature electronics that function reliably in temperatures up to at least 250° C and probably up to 300° C. (That's about 480°F to 570°F.) Nobody else, says Randy, has developed electronics that work at that temperature for any extended period of time.

"This is stuff that's never been done, it's unique," says Randy. "We're even getting the attention of the scientists outside of geothermal in the earth sciences community."

Conventional modern electronics begin to fail at much lower temperatures, say in the 150°C range.

Randy and Joe developed the electronics for geothermal energy research, but the technology clearly has major relevance for researchers in volcanology and seismology. It has potential application in the oil and deep natural gas drilling and exploration business. And there are more than a few high-temperature industrial processes that could be enhanced and made more efficient if better electronic-based monitoring tools were available.

HOT STUFF — Joe Henfling, left, and Randy Normann (both 6211) show how their high-temperature electronics pacakge can be lowered into a geothermal well. The package can function effectively at 250°C and more. (Photo by Randy Montoya)

The geothermal industry needed a tool — an electronics instrument package — that could be sent down a geothermal well to collect data without heat shielding. The current state of high-temp probe technology left more than a little to be desired, bearing a closer resemblance in some ways to 19th century plumbing than to 21st century electronics.

Randy explains the problem: "One of the probes that's commonly used to study volcanoes and earthquakes uses tubing to bring fluid from the bottom of the well to the surface. You've gotta bring the fluid to the surface to measure it, to analyze it, because it's too hot for your instruments down there. Obviously, this isn't very precise, because the fluid cools as it rises through the tube. You can compensate for that, but you can never be as precise as you want to be. Nobody has ever depended on deep-well electronics [in high-temperature research], because electronics drift, they fail. At that temperature, they're just not reliable." That is to say, conventional "bulk" silicon microelectronics aren't reliable.

Again, Randy explains why: "Silicon is by nature a semiconductor; for electronics applications, you dope silicon [treat it with other elements] to make it more of a conductor or less of a conductor. The problem is that high temperatures tend to excite the atoms, resulting in leakage currents in the bulk silicon. The silicon moves from being a semiconductor to being a conductor. And once that happens the electronic device no longer functions. A technology that sidesteps silicon's temperature-related limitations is silicon-on-insulator, or SOI."

"All we did was loan them a tool and look at all this free research we're getting."

Reducing leakage currents

"Silicon-on-insulator builds up the transistors on glass, which is a nonconductor," Randy says. "And, since you're building your transistors on nonconducting material, they're isolated and these leakage currents don't destroy the device. SOI reduces leakage currents by a factor of 100 at these higher temperatures."

These aren't theoretical projections. Randy and Joe have already built and demonstrated a tool, a complete telemetry data acquisition system, based on the SOI technology. It's been field-tested in a geothermal well at 240°C, measuring real-time pressure and temperature. Researchers who've tried the tool can't wait to get their hands on one of their very own.

While the SOI technology is familiar, the application-specific integrated circuit, or ASIC, is the work of Randy and Joe. The proprietary ASIC is, in fact "the glue that holds the tool together," Randy says.

"We've applied for a copyright on the ASIC, and we're going to license that to Honeywell, which will sell to the high-temperature industry. By combining commercially available SOI components and our ASIC, we've developed a universal instrumentation system for any number of high-temperature applications."

Randy and Joe are working with a number of industry partners on this work, funded by DOE's Geothermal/Wind Energy Program Office. Randy says several industry partners are developing specialized components and sensors to work with the Sandia ASIC.

"For example," Randy says, "one of our partners is developing a tilt sensor — that's a combination MEMS [microelectromechnical system] and SOI device."

Such an instrument could tell researchers a lot about movement deep within the Earth, Randy notes, an important data point in understanding earthquakes and volcanoes.

"MEMS has the capability of operating at very high temperatures; in Europe, they've been testing silicon-based MEMS devices up to 500°C [980°F]. It appears to be really quite viable to merge high-temperature electronics with a new family of specialized MEMS devices."

With MEMS devices like tilt sensors mated to magnetic sensors, Randy says, "we can do not just logging — gathering information — but guided drilling at depths greater than 20,000 feet. So we're building a steering tool to sense direction and movement." Such a drill would enable researchers — and geothermal explorers — the ability to follow the unpredictable branching of a geothermal upwelling.

Other potential applications:

- An instrument to measure wellbore bending. (Pipes are bent when earth faults shift.)
- A tool for gauging pipe wall degradation. (Pipe can get eaten away in the caustic environment of a hot well.)
- A device to measure and control the flow of fluids and determine if the flow is oil or water. That could be very useful to beef up the efficiency of multi-completion (several wells feeding into one) oil fields, Randy says.

Like all good technologies, end-users are discovering applications never envisioned by the developers. Japanese researchers at Unzen volcano, for example, were able to use a prototype tool to measure not just temperature and pressure, but detect formation of fluid-filled fractures as well. That turned out to be quite a useful capability, Randy says.

"While you're drilling, if you see your pressure fall off, that's because fluid is running into the formation," he says. "Well, that is a potential production place for geothermal energy, because that means fluid could come back out of the hot rock to drive a geothermal power plant. In other words, they were able to see production zones immediately using these electronics. That was pretty cool. We wrote up a report to DOE saying, 'All we did was loan them a tool and look at all this free research we're getting.' "

"We've just seen the tip of the iceberg, but the whole iceberg is beginning to appear. The fact that right now it's just the two of us [Joe and Randy] complicates things for us because we can't do all the things we'd like to do."

The Unzen fatalities: Why better research tools matter

After almost 200 years of relative quiet, Mt. Unzen volcano in Japan came to life in November 1990. Beginning that month, a bulging lava dome would periodically release a pyroclastic flow, a semifluidized mixture of ash and rock fragments and super-hot expanding gases. A pyroclastic flow blows out of a volcano and charges at bullet-train speed and with tsunami-like force down the mountain face.

On a June night in 1991, Unzen was up to its by-now familiar tricks. French and American volcanologists, drawn to the volcano because of its almost Old Faithful-like predictability and promise of a lot of good science, were on the scene with their instruments, their cameras, their passion.

Like the good volcano cowboys they were, they got as close as they dared to Unzen's almost nightly pyrotechnics. This time, though, they got too close. And Unzen's pyroclastic flow was too big. It swept down on them. They saw it coming and they knew what it meant.

By the time Unzen settled back down to quiescence in 1994, it had taken 44 people and destroyed hundreds of homes.

Japan sits on one of the hottest, most geologically active zones in the world. Indeed, the island chain is volcanic in origin. And episodes like the lethal Unzen eruption, the periodic deadly earthquakes, are an all-too-familiar fact of life.

Japanese scientists spend careers trying to better understand the dynamics of the processes going on under their feet. And they do a good job, among the best in the world in this tight-knit fraternity. With better tools, with better instruments, they could do an even better job of understanding and predicting geological phenomena — and saving lives.

That is why Japanese researchers have been early and ardent supporters of Sandia's high-temperature electronics: Lives are at stake.

Materials Processing Coatings Laboratory first Sandia design group to receive ISO 9001 certification

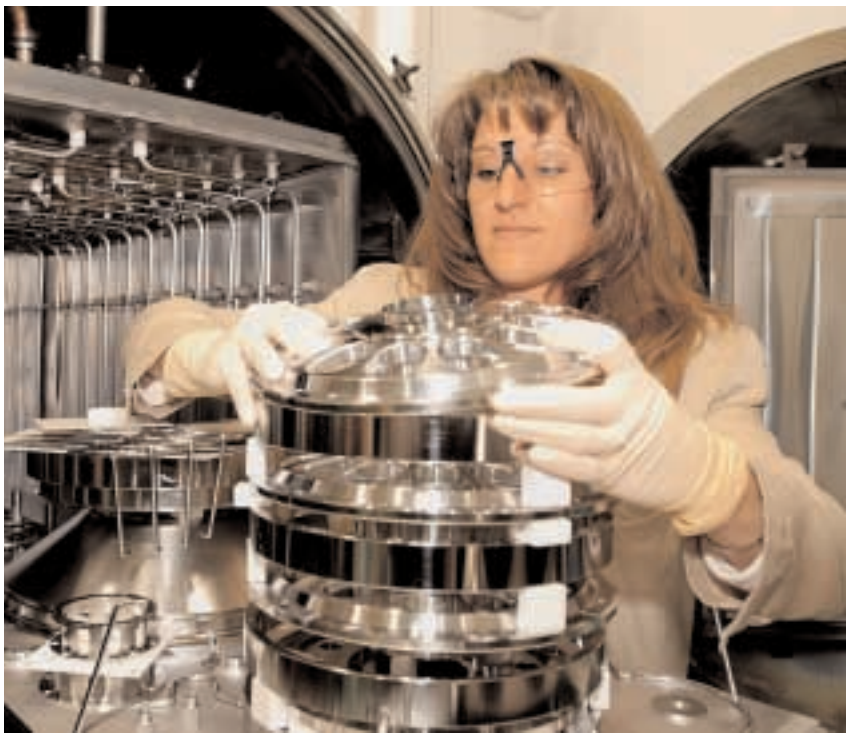
Laboratory already realizing cost-saving benefits of following international business management system

By Chris Burroughs

Having just received an ISO 9001 certificate of registration in August, Sandia's Materials Processing and Coatings Laboratory (MPCL) is already realizing benefits of following the international business management system.

"Things are running more smoothly and our communications are greatly streamlined," says John McKenney (1670), one of the steering committee members who spent nine months this past year implementing the program. "We are seeing a reduction in overtime and emergency work related to planning and more efficiency in the way we work. As a result, we expect to save a substantial amount of money this fiscal year."

The International Organization for Standardization (ISO), established in 1947, is a nongovernmental worldwide federation of national standards bodies from some 140 countries. Its promotes the development of standardization and related activities to aid the international exchange of goods and services. It also bolsters cooperation in the areas of intellectual, scientific, technological, and economic activity. ISO's work results in international agreements that are published as international standards.



MARY WALKER (1670) uploads diode components into a hydrogen/vacuum firing furnace at the Z pulsed-power facility. Sandia's Materials Processing and Coatings Laboratory (MPCL) has received an ISO 9001 certificate of registration. (Photo by Randy Montoya)

ISO 9001:2000

ISO 9001:2000 — the latest version of ISO 9000 — is used by companies seeking a management system that provides confidence their products conform to established or specified requirements. It is currently the only standard in the ISO 9000 family that is certified by an external agency.

Last year Manufacturing Enterprise Departments 14717 and 14186 ("The Shops") received the first ISO 9000 certificate of registration at the Labs (*Lab News*, June 2, 2000). The MPCL is the first design group at Sandia to achieve an ISO 9001:2000 certificate of registration.

John says the MPCL team opted to adopt the ISO 9000 standard because of the laboratory's rapid growth in recent years and the fact the standard is recognized and valued worldwide. MPCL designs, develops, fabricates, and services critical components in support of high-energy-density physics and inertial confinement fusion experiments at Sandia's Z pulsed power facility.

"We recognized the need to employ an infrastructure that could handle that kind of growth and expected future growth," John says.

"Things are running more smoothly and our communications are greatly streamlined. We are seeing a reduction in overtime and emergency work related to planning and more efficiency in the way we work."

"ISO 9000 has a proven track record; most high-tech companies use the standard. We decided to move forward and develop our business management system framed to the ISO 9001:2000 standard."

The MPCL started the development of its business management system in November 2000 when its people laid out an implementation plan, taking on an aggressive schedule that called for ISO 9001:2000 registration by the end of July 2001.

The steering committee — consisting of John, Emmett Garrity, Mary Walker, and Laura Wright-McKean (all 1670) and directed by Johann Seaman (1670), team leader, and Keith Matzen, Level II Manager of High Energy Density Physics Dept. 1670 — outlined the area of standards in which they needed to be competent and conducted a gap analysis to determine how to get from "there to here."

Two months later, all MPCL staff — including the steering committee, Dennis Lobley, Charlie Meyer, Roger Sirois, Anthony Romero, and Jeff Gluth (all 1670) — finished the writing of all internal processes. This critical step involved installing a database and developing work processes, forms, and work instructions related to the MPCL for all design, manufacturing, and logistics efforts. They also implemented a new way to track metrics of how processes are functioning and areas needing improvement.

That was followed by a series of internal audits to determine how well the MPCL actually performed to the newly documented business management system.

QMI conducts audit

In May the largest ISO registrar in North America, QMI, came to Sandia and conducted a pre-assessment audit, letting the team members know if they were on track and if they could meet the target registration audit date of July 25-26. QMI returned in July for the final audit. It awarded the certificate of registration for ISO 9001:2000 to the MPCL in August.

"The level of effort that the people on my team elevated their game to is nothing short of exceptional, especially given the fact that they still had to perform a heavy workload in addition to deploying the most difficult management system there is," John says. " am very proud of what my team has accomplished."

Felipe (Phil) Rivera (12142), Labs-wide ISO 9000 program manager, calls ISO 9000 certification a "significant accomplishment."

"ISO certification comes at considerable effort on the part of the folks in the MPCL," Phil says. "But they are already starting to see the payoff."

He notes that ISO 9000 certification accomplishes several aspects. It makes sure that the organization is structured to ensure all participating members understand their roles and responsibilities and that management provides adequate oversight, resources, and responsiveness to accomplish the goals stated in the business management system. It also ensures that customers have avenues to communicate their concerns and needs. Addressing customer satisfaction is paramount in meeting the requirements of ISO 9001:2000.

Now that the MPCL is ISO 9000-registered, team members' work still isn't complete. They must conduct internal ISO 9000 audits to monitor the efficiency of their business management systems and processes and have surveillance audits conducted every six months. In addition, the MPCL staff has already been asked to work with other departments in their center to assist in developing their own business management systems.

"Achieving ISO 9000 certification is not the end," John says. "It's the beginning. It is a means toward the end of ensuring your organization is providing the best and consistent services and products available."

More information about ISO 9000 can be found at the Sandia ISO 9000 website at http://www-irn.sandia.gov/organization/div12000/ctr12100/labstand/ISO/main.htm or by calling Phil at 844-1176.

Sandia target payload intercepted successfully

A SANDIA TARGET payload was part of the latest successful US missile defense intercept over the Pacific last week, a test known as Integrated Flight Test #7, conducted by the Ground-based Midcourse Defense program. During the test, Sandia's payload lifted off from Vandenberg Air Force Base Monday evening, Dec. 3, aboard an Orbital Sciences Corp. launch booster system. Approximately 30 minutes after launch, following deployment of the Labs-designed warhead and decoy into space, the kill vehicle launched from Kwajalein Atoll destroyed the target warhead. "It was a successful intercept test," says Sandia Targets Department manager Bruce Swanson (15415). "All preliminary data indicate that the Sandia targets functioned as expected." Sandia targets have been aboard all seven IFT flight tests so far, and the Labs already is working on a target payload for IFT-8, says Bruce. The Long Range Targets Product Office manages the targets program for the Ballistic Missile Defense Organization. Sandians in Centers 15400, 14100, 12600, 9100, 2300, and 2600 contributed to the project. At left is the Sandia payload and launch vehicle on the "launch pad." (Photo by Diana Helgesen, 15419)

Many faces, one heart, one goal: to serve the nation

(Photo by Randy Montoya)

FBI's Unabomber, Centennial Park investigator paints picture of challenges faced in war on terrorism

By Bill Murphy

Americans will likely die on American soil, possibly in large numbers.

That sentence from the 1999 report of the US Commission on National Security/21st Century — the Hart-Rudman Commission — has a grim, prophetic ring to it in the aftermath of the Sept. 11 terror attack on the US. But, as terrorism expert and former FBI special agent Terry Turchie made clear in a symposium for Sandia employees on Nov. 28, the Hart-Rudman assessment wasn't so much prophetic as it was a realistic picture of the state of the world.

Turchie, head investigator on the FBI Unabomber Task Force, a former deputy assistant director in the Bureau's Counterterrorism Division, and now a counterintelligence officer at Lawrence Livermore National Laboratory, spoke to a nearly full house of Sandians at the Steve Schiff Auditorium about "How to Catch a Terrorist."

A wave of attacks since '93

To set the stage for his remarks, Turchie rattled off a Devil's Dictionary of terrorist attacks on US interests, beginning with the February 1993 fatal attack on the World Trade Center, to the October 2000 attack on the USS *Cole*. This "decade of terrorism" (as he called it), culminating with the 9/11 assault, offers inescapable proof that America faces a new kind of national security threat.

Turchie cited the familiar list of domestic infrastructure targets that could be vulnerable to terrorist attack: transportation networks; gas and oil storage facilities; water supplies; telecommunications; energy supplies; banking/financial systems; government operations; and emergency services.

Any or all of these infrastructure systems could be viewed as attractive targets by terrorists in the new century, Turchie said. And Sandia and other DOE laboratories can (and do) play a major role in developing technologies to protect them.

"It is my hope," Turchie said, "that [by the end of my remarks] you'll have more information and be in a position to better understand and evaluate the challenges we face."

In a largely anecdotal style punctuated at times with humorous asides, Turchie described the convoluted trails investigators must follow to trap their prey.

A helpful blunder by a 'mastermind'

He described, for example, the movements of Arab terrorist Ramzi Yousef: after planning the 1993 World Trade Center attack, Yousef "vanished into the woodwork, preparing to strike again." After some nation-hopping among friendly (to him) ports of call, he emerged in the Philippines. There, he began to shape an ambitious plan to bring down simultaneously a dozen US airliners over the Pacific in a demonical tour de force.

However, in a Manila apartment where the bombs for the attack were being prepared, something went wrong; a fire broke out and the terrorists fled. In his haste Yousef, the terrorist mastermind, left behind a laptop computer. It held files detailing his plans and also contained biographical data on his confederates. "That," said Turchie dryly, "was very helpful."

A month later, Yousef was arrested in Pakistan. He was brought to the US, convicted, and sentenced to life in prison for his part in the 1993 attack. That laptop was a lucky break, the kind of thing even the best investigators often rely on to break a case open, Turchie said.

'Gee, this sounds like your brother'

Consider the hunt for the Unabomber, which by the mid-1990s had become the longest-running investigation in FBI history. After a 35,000-word "manifesto" by the Unabomber was published in major newspapers (to meet extortionary demands by the killer), the wife of one David Kaczynski said to her husband, "Gee, this sounds like your brother." Indeed it did. David Kaczynski recognized the ideology expressed in the manifesto (and even some of the word usage) as that of his brother Ted. After some personal agonizing — he was, after all, thinking about turning in his brother on capital crimes — he notified the FBI. Turchie said that of the thousands of tips the investigation generated in the case, the lead from David Kaczynski stood out as "the one."

"Hey," Unabomber investigators said to each other, "we're closing everything else down. This is the right guy." Turchie humorously described trying to "sneak" 200 armed agents into Helena, Mont., via commercial airliner for the end game with the Unabomber. It wasn't easy.

"After the first 20 [agents filled out required paperwork with the airline to carry their weapons aboard the flight], the airline began to get suspicious," Turchie said. Ultimately, surprise was preserved and Kaczynski was cornered at his hermitic redoubt.

Turning to the best of the best

Agents going through the tiny cabin found a device, clearly a bomb, ready to mail to an unsuspecting victim. Desiring to dismantle the bomb while preserving vital evidence for prosecution, they turned to the best of the best — Sandia's own Chris Cherry and Rod Owenby. Chris and Rod succeeded. Critical evidence was preserved and proved invaluable at trial. Ted Kaczynski now sits in a federal prison serving multiple life terms.

Turchie noted that foiling terrorists isn't "a one-agency, one-group deal." It's a complicated, demanding, and multifaceted challenge that requires involvement across the entire spectrum of analytical, investigatory, research, and law enforcement resources at the federal government's disposal.

Indeed, Turchie predicts that "as time unfolds, as [Homeland Security Director] Tom Ridge becomes more aware of the resources available to him, the national labs will become even more involved in our fight against terrorism. The labs were born in crisis; your work in this new challenge is right in line with that tradition."

Sandia signs two MOUs with New Mexico Tech

Agreements establish special master's degree program and new research in power sources manufacturing

By Chris Burroughs

In a move to accredit the Weapon Intern Program and advance the state of the art of manufacturing technologies at the Labs, Sandia officials signed two memorandums of understanding (MOU) with New Mexico Institute of Mining and Technology earlier this week.

One agreement establishes a master's degree program in engineering mechanics with a specialty in explosive engineering. The degree program was initiated for participants in Sandia's Weapon Intern Program.

The other signing entered an agreement with the university to do new research and development in areas related to power-sources manufacturing.

Signing for the Weapon Intern Program MOU were Joan Woodard, Sandia Executive VP, and Dan Lopez, President of New Mexico Tech. Also on hand were John Hogan (2907), senior scientist in charge of the Weapon Intern Program; Andy Rogulich (2911), program manager and instructor; Roy Baty (2131), Sandian and adjunct professor for New Mexico Tech; Peter Gerity, Vice President of Academic Affairs at New Mexico Tech; and Harold Walling, New Mexico Tech professor and a retired Sandian.

Participating in the signing for the research and development related to power sources were VP 14000 Lenny Martinez; Robert Bickes, Manager of Power Source Components Dept 2523; John Meason, Director of the New Mexico Tech Energetic Materials Research and Testing Center; and President Lopez.

Weapon Intern MOU

The Weapon Intern Program trains the next generation of weaponeers at Sandia in an intense two-year program that gives young scientists and engineers a broad and in-depth understanding of nuclear weapons and the entire weapons complex. As part of the MOU, New Mexico Tech gives the interns 21 hours of graduate credit for the courses they take as part of the program. In addition, Professor Walling conducts three classes — an introduction to explosive engineering, shock wave theory, and advanced explosive engineering. The university considers the research the interns do as an independent studies segment of the master's degree program.

MOU SIGNING — Participating in the MOU signing between Sandia and New Mexico Tech to jointly do new research and development in areas related to power-sources manufacturing are, from left, VP 14000 Lenny Martinez; John Meason, Director of the New Mexico Tech Energetic Materials Research and Testing Center, and New Mexico Tech President Dan Lopez. Not pictured is Robert Bickes, Manager of Power Source Components Dept. 2623.

"The three courses round out the 30 hours the interns need to obtain a master's degree," says Andy, program manager and instructor. "This degree gives each participant something personal to take away when the program ends and the knowledge of explosives that will benefit Sandia no matter which department they are in."

The Weapon Intern Program is also working on establishing a PhD program with New Mexico Tech. Roy Baty (2131), a 2000 graduate of the program, will teach one of the six required courses. The courses, plus a dissertation, written and oral exams, and completion of the master's degree, will earn participants a PhD in the energetic materials disciplines.

All of the New Mexico Tech master's and PhD courses offered to the interns are also open to other interested Sandians. They are taught Tuesday and Thursday evenings.

Regional Alliance for Manufacturing

The MOU dealing with new research and development related to power sources manufacturing was signed with the university's Energetic Materials Research and Testing Center (EMRTC). It is part of Sandia's Regional Alliance for Manufacturing Project (RAMP), established by VP 14000 Lenny Martinez to advance the state of the art of manufacturing technologies that support national security strategic business units (SBU).

> *"This degree gives each participant something personal to take away when the program ends and the knowledge of explosives that will benefit Sandia no matter which department they are in."*

Under the agreement, scientific and engineering experts from EMRTC will collaborate in research with Sandia's Power Source Components, Independent Surveillance Assessments & Statistics, and Reliability Assessment & Human Factors Departments. Their initial work will focus on thermal batteries — figuring out how to process them better by developing and applying statistical methods necessary to assure high reliability and quality in small lot production; traditional techniques require sample sizes too large to be used cost effectively.

"We are enthusiastic about this MOU because it signifies the beginning of new manufacturing research collaborations and potential new funding sources for Sandia," says Cesar Lombana, Manager of Concurrent Design and Manufacturing Program Dept. 14011 and RAMP Manager. "We see this as a way to improve the manufacturing methods of these batteries that are high-tech, small-lot production parts and that are part of nearly every weapons system."

Master's recipients honored in Dec. 9 ceremony

The Weapon Intern Program participants who completed the requirements for a master's in engineering mechanics with a specialization in explosives engineering were honored during a graduation ceremony Dec. 9 at the Four Hills Country Club.

They completed the three graduate courses — an introduction to explosive engineering, shock wave theory, and advanced explosive engineering — offered by New Mexico Institute of Mining and Technology and the regular intern program coursework. Each was given a letter of completion at the ceremonies and will be officially awarded the master's degree by the university in May.

The recipients are Brad Altman (2113), Roy Baty (2131), Brett Bedeaux (2109), Ted Bujewski (2113), Rick Cameron (DOE/AL), Doug Deming (2341), Brian Gaude (USAF), Ken Griego (2612), John Hogan (2907), Chris Howell (USAF), Chrisma Jackson (8415), Larry Luna (2112), Dave McMindes (KCP), Mark Martin (2565), John Myers (DOE/Al), Jay Pape (DOE/AL), Paul Rivas (5830), Brad Smith (1743), and Jim Wolcott (12332).

Those receiving letters of recognition for taking the three courses and who will complete their requirements for the masters degree in September 2002 include Merlin Decker (2131), Kim Haulenbeek (2992), Scott Jacobs (USAF), Lori Maestas (2951), Robert Repine (KCP), Andy Rogulich (2911), Art Shanks (12335), Dan Sherman (2112), and Tony Sukla (USAF).

Feedback

Q: *I don't know if this applies to the TNG and MLS ladders as well, but the new compensation curves for PMTS indicate that the relative midpoint of that curve in relation to the Market Reference point is significantly less pronounced than for those for MTS and DMTS, and especially for SMTS. One could interpret this as general age discrimination. I would suspect that the SMTS population is typically much younger than the PMTS population and, frankly, by being younger and so talented, they possibly have more career opportunities and options available to them elsewhere since they don't have as much invested in Sandia. Don't the curves suggest that we are trying to keep this younger talent here at perhaps the expense of those at Sandia who have already committed to Sandia for the longer haul? It is a fact that the missions and technologies of the labs have changed (and continue to change) over the last decade, but is this fair to those who helped shape the Labs and its reputation?*

A: First, let me emphasize that Sandia does not and will not condone discriminatory treatment to any employee by another employee or by a policy. Nor is it Sandia's intent to retain shorter-service employees at the expense of longer-service employees.

What you have observed, in part, reflects Sandia's very aggressive start rates for new hires. In order to attract and retain the caliber of employees needed at the Labs, we try to establish new-hire rates that are at the 90th percentile of what employers across the nation are offering for a given discipline and degree level. Most new hires are typically brought in at the MTS or SMTS level. When viewed as an aggregate, this results in the Sandia population at these levels being closer to their market reference point than other classifications.

In looking at the composition of our staff in each job classification, it should be noted that long-service employees are not just located in the PMTS level. Placement into any given level of the Integrated Job Structure is based upon meeting all the criteria of a given level and is not based solely upon education or time in a position. The criteria reflect the skills, knowledge, and abilities that define a job level, and years of experience alone are not an acceptable basis for moving to a higher level. Therefore, any level could be a career level for a given employee, and length of service will vary as well. — *Don Blanton (3000)*

Sandia team investigates use of Labs' technology to ensure 'farm-to-fork' safety of the nation's food supply

By Chris Burroughs

When farm-to-fork systems fail, billions of dollars can be lost and people can die.

That's the reason a Sandia team is working with several agriculture universities and agencies to search for ways to apply Labs-developed technology to agricultural and food-safety issues.

"The agricultural infrastructure is a multi-billion-dollar industry in the United States," says Darryl Drayer (6804), who heads up Sandia's agricultural security and food safety initiative. "We think it's important to take technologies that have already been developed at taxpayer expense and apply them to this industry."

He is talking about such Sandia-developed technologies as:

- Decontamination formulation that rapidly neutralizes chemicals and biological warfare agents.
- Rapid Syndrome Validation Project (RSVP) that addresses the identification of naturally occurring or terrorist-caused diseases.
- Rapid modeling and computing capabilities.
- Microsensors that can sense chemicals in water or food.
- Water security and sustainability.

Regina Hunter (6804), one of the researchers working with Darryl on the effort, says that while there are probably other Sandia-developed technologies that can be applied to making sure food supplies are safe, it's best to start with those that have the most likelihood of being used immediately.

"Everyone eats," she says. "We depend on the safe production and processing of agriculture products. That's why it's important to move ahead as rapidly as possible on this initiative."

Decontamination foam

Cecelia Williams (6245) is already exploring the possibility with Kansas State University of using the decontamination formulation — known for its ability to kill anthrax — to eradicate *E. coli*, salmonella, and spoilage organisms that may exist on food processing equipment. When used as a foam, the formulation — which is non-

THE DECONTAMINATION FORMULATION is being tested to determine its effectiveness on *E.coli,* salmonella, and spoilage organisms that may exist on food-processing equipment.

toxic, noncorrosive, and looks like shaving cream — may also have the potential for sanitizing meat cutters' equipment and sanitizing cattle trucks and poultry houses.

One Kansas State food scientist doing research with the foam found a complete kill ("10-log") of unattached cells of common food-born pathogens. The real test will come when the foam is used on cells that have actually attached themselves to hard surfaces, such as stainless steel within a processing plant.

"One of the things that we will be looking at with the foam product is its effect when used in the presence of organic materials," says Randy Phebus, the lead Kansas State researcher in the project. "For example, if there is organic material left on a [conveyor] belt or floor, does that inactivate the Sandia formulation in the same way it inactivates other sanitizers, such as bleach?"

Sandia and Kansas State are also investigating other forms of the formulation, like using the solution as a mist in the air.

Before the decontamination foam can be actually used in the food sector, it must receive regulatory approval.

RSVP

Another Sandia technology that might play a role in making sure food supplies are safe is RSVP — a robust, simple, and rapid syndrome-reporting system for US health care professionals. The algorithm-based software, which takes advantage of Sandia's rapid modeling and computing capabilities, is intended to help public health authorities manage common outbreaks of disease, enabling them to recognize an unusual pattern of syndromes that could warrant special concern or intervention.

"Everyone eats. We depend on the safe production and processing of agriculture products."

Sandia and Kansas State are exploring the possibility of expanding RSVP to stock animals, looking to use it as a way to monitor disease outbreaks in feedlots, for example.

Sandia senior scientist Al Zelicoff (5320) and Greg Mann (5327) have also been working with Kansas State on the project, looking at syndromes in animal populations.

"In Kansas alone, several million head of cattle are routed through feedlots annually," Regina says. "Diseases can spread through the feed lots, at a great cost to the cattle owners. Having the ability to predict potential outbreaks would provide economic value to the cattle industry and improve food safety for customers."

Environmental monitoring

Sandia has many technologies — like sensors — that could be used to detect contamination of food coming across the border or to monitor the use of pesticides in the fields to make sure they are not over-applied.

Water security and sustainability

The agriculture industry is one of the biggest users of water. For that reason it is important to ensure the safety, security, and sustainability of water supplies. Sandia has sensor technologies to monitor the quality of water and has developed systems to detect and correct the vulnerabilities of water supplies. Darryl and Regina are working closely with Mike Hightower (6251), who heads up Sandia's water initiative.

In the future, Darryl anticipates that other Sandia technologies will be transferred to agriculture. Already, for example, Ren Salerno (5324) is applying Sandia's physical protection expertise to sensitive biological research facilities.

"The field is wide open for opportunities to use our technologies," Darryl says. "We have to explore all the options to see which technologies are applicable."

SANDIA AND KANSAS STATE are exploring the possibility of expanding RSVP to stock animals, looking to use it as a way to monitor disease outbreaks in feedlots, for example.

Sandia hosts agriculture security workshop

Experts in agriculture security from Kansas State University, New Mexico State University, and industry joined Sandia researchers in Albuquerque last week during a workshop on "Envisioning the Future of Agricultural Security and Food Safety." More than 40 participants discussed topics ranging from incremental costs for a pound of beef to biological warfare.

During the workshop the participants identified existing and next-generation technologies that could be used to ensure the security and safety of food in the US.

The food-safety experts represented the fields of horticulture, animal husbandry, veterinary medicine, food processing and transportation, food-borne disease, and biotechnology.

The physical scientists and engineers — mostly from Sandia — represented microsensors, advanced computing and robotics, remote sensing and environmental technology, physical protection, and manufacturing.

The goal of the workshop, says Regina Hunter (6804), was to start a dialogue that will "ultimately lead to the development of technologies to improve farm-to-fork safety and increase the competitiveness of US agriculture."

AGRICULTURAL SECURITY — Regina Hunter talks to Miley Gonzalez, left, interim vice provost for research at New Mexico State University, and Gerald Jaax, associate vice provost for research compliance and university veterinarian at Kansas State University, during a recent workshop on agriculture surety.

Ground broken for new International Programs Building in Sandia Science & Technology Park

By Howard Kercheval

Sandia Deputy Director Joan Woodard lauded the work of the Cooperative Monitoring Center and other facets of the Labs' International Security Programs at groundbreaking ceremonies for the new International Programs Building.

Located in the Sandia Science & Technology Park outside the Eubank Gate, the building will be developed and owned by Amelang Partners, of Houston, and leased to Sandia. It was designed by the Albuquerque architectural firm Dekker/Perich/Sabatini and is being built by the Albuquerque general contracting company Jaynes Structures.

SENIOR VP Roger Hagengruber at the groundbreaking for the new International Programs Building.

Senior VP for National Security and Arms Control Roger Hagengruber (5000) and Dori Ellis, Director of International Security Center 5300 (ISC), hosted the event for International Security Programs, which will occupy most of the three-story, 65,000-square-foot building.

CMC widely recognized

Feigning surprise as he looked over his shoulder at a puff of talcum-like dust blossoming up from the bottom of the large tent set up for the ceremony on the blustery Dec. 4 afternoon, Roger got a laugh from the guests when he turned back to them and quipped, "Believe me, in another eight months or so, this is going to be a lot better!"

Completion is expected in July 2002.

The ISC, which now occupies space on Sandia's main campus and in Research Park, manages a broad range of international programs, including:

- US-Russian nuclear security
- International safeguards and security
- Regional security
- Arms control support
- Defense nuclear materials stewardship
- New initiatives, such as biosecurity

ARCHITECT'S RENDERING courtesy of Dekker/Perich/Sabatini.

"The Sandia team and the contractor team have worked very hard to get us to this point and we're very excited about the new building," said Nancy Davis, Manager of Sandia's Cooperative International Programs Operations Dept. 5329.

The International Programs Building (IPB) central location also will enable greater utilization of the CMC, which is recognized widely for bringing together the international security policy and technology communities.

Karl Amelang, CEO of the developer, said his company is "delighted to have been selected by the Sandia National Laboratories to develop the . . . International Programs Building to be located in the Sandia Science & Technology Park. SS&TP is the perfect location for a project of this nature . . . (and the building) is a harbinger of many similar facilities to be developed in the future at this state-of-the-art research park."

The departments of State and Defense have used the CMC in the past as a neutral venue for interactions with representatives of foreign governments on the technical aspects of arms control, nonproliferation, and other security agreements.

BREAKING GROUND ON A DREAM — Sandia and community leaders break ground on the new International Programs Building at Sandia Science & Technology Park.

'Great technology, great people'

Joan emphasized that point in her remarks at the groundbreaking ceremonies, noting that the retired air marshals of India and Pakistan — two countries that have fought several wars with each other over the disputed Kashmir region over the past half-century — were able to sit down together in the CMC to try to solve that protracted conflict.

Sandia offers "great technology and great people" and the CMC is an institution that anticipates problems and works on solutions, she said, "And this building represents that."

Representatives from more than 100 countries have visited the CMC, including Chinese Defense Minister Gen. Chi Hao Tian, who discussed the US approach to arms control and nonproliferation when he visited the United States in 1996.

Meanwhile, the Sept. 11 terror attacks on the United States have served to reemphasize the relevance of the programs that comprise the ISC as they relate to the US national security mission. These programs have the potential to contribute rapidly to the government's antiterrorism initiative through their focus on nonproliferation of weapons of mass destruction and by drawing on the CMC's established relationships and cooperative technical activities.

Labs leadership gets 'lean' during innovative training program

Sandia's Laboratory Leadership Team and some Center directors in late November went through a five-day Lean Leadership Training program at the Albuquerque Marriott.

The training had two goals:

- Instilling in Sandia's leadership the knowledge required to achieve lean processes that operate with so-called "six sigma" quality.
- Getting positive results: lower cost with better quality and higher customer satisfaction.

The Lean Leadership Training program is part of a larger Lockheed Martin initiative called LM21 "Operating Excellence."

According to Sandia LM21 Program lead Kim Mitchiner (9800) almost every Lockheed Martin business unit has a designated LM21 coordinator.

The purpose of LM21 is to "identify ways to eliminate waste from processes, that is, to lean out the processes, making them more cost-effective, more efficient, and more productive."

LM21, Kim adds, "also seeks to reduce variability in the processes and to mistake-proof them."

Training in the Lean Leadership approach was provided by recognized experts in lean processes, customer value, and creative problem-solving. Kim says the first two and a half days of training focused on learning how to determine customer value, how to pursue perfection with out-of-the-box thinking, how to eliminate waste and efficiently deliver value to the customer, and how to use structured problem-solving techniques to reduce process variation.

To provide a tangible connection to the abstract principles being discussed, attendees participated in "catapult" exercises — team members applied their newly learned principles to design and operate a simple catapult — to learn about variability and to understand how to reduce variability in a process.

The most valuable part of the training, Kim says, were the last two days. That's when participants began applying the lean and sigma-six principles they'd learned to real Sandia problems and implementing those changes.

LEAN LEADERSHIP TRAINING — Executive VP Joan Woodard, VP Bob Eagan (6000), Sr. VP Tom Hunter (9000), VP Jim Tegnelia (15000), Bonnie Apodaca (10500), and Carolyne Hart (1200) collaborate on their "statapult" — or statistical catapult — during a Lean Leadership Training exercise.

'Just Do It' projects:

Here are some of the processes attendees at the Lean Leadership Training program tackled:

1. Reduction in the time required to initiate work on WFO – Other federal agency proposals.
2. Improvement in the Grand Challenge process.
3. Reduce cycle time and number of signatures for foreign travel process.
4. Transformation of the Nuclear Weapons Appraisal process.
5. Improvement in the current hiring process for external MTS's.
6. Improvement in the Work for Others revenue projection process.
7. Improvement in the process for rapidly forming cross-functional teams.

Sandia Classified Ads Sandia Classified Ads Sandia Classified Ads Sandia Classified Ads

MISCELLANEOUS

ELECTRONIC PIANO Kurzweil Ensemble Grand, purchased in July this year, $8,900 value, sell for $5,700. Hill, 299-9416.

GIRLS BEDROOM SET, oak twin daybed w/trundle, mattresses, end table, dresser w/mirror, excellent condition, $600 OBO. Serna, 899-9618.

DISHWASHER, kitchen sink, faucets, garbage disposal, & counter tops, free to charity/helping organization. Jones, 797-4894.

JENNAIR ELECTRIC RANGE TOP, grill, griddle, glass ceramic (radiant) cartridges, down draft, 220V, excellent condition, $150, Sutherland, 345-1183.

WINDOWS XP, in box, 100% legal, requires too much new hardware for me, $75. Molecke, 296-5850.

SMALL KILN, on stand, $125. Campbell, 888-3135.

COUCH, full-size, mixed light colors w/mauve as primary color, good condition, $40. Montoya, 342-0043.

COMPUTER NERD'S PERSONAL COMPUTER, loaded w/everything, color & laser printers, monitor, super sound, includes over $1,000 of current software, will fax details, $1,200. Simmons, 281-3590.

BOAT COVER, heavy-duty, waterproof, large-size for 17-ft. boat, very good condition, $50. Burstein, 897-7562.

SKI VACATION, 1 week, fully furnished cabin for 6 people, plus 1/2-price lift tickets at Angel Fire, $650. Lagasse, 298-0977.

ANTIQUES: 1860s wooden general store counter, $350; oak mantel, embellished, $350; walnut caned rocker, $260. Hall, 281-1386.

SAUDER COMPUTER DESK, w/hutch, good condition, $100 OBO; women's bike w/helmet, like new, $80. Poulter, 291-0607.

HARRISVILLE LOOM, 36-in., 4-harness, 4-treadle, folding, tray, warping board, shuttles, bobbins, 2 reeds, $400. Vaughan, 291-9857.

WOOD BURNING STOVE, large Lopi "Liberty" edition, brass-framed door & legs, 2 yrs. old, $2,100 new, asking $1,500. Rowe, 286-5432.

NOKIA MODEL 5190, w/extra battery & charger & owners manual, $10. Dubes 550-5827.

TICKETS, men's Lobo basketball 2 ea. NMSU game Dec. 16, Sec. 11, Row 3, Seats 11 & 12; 2 ea. CSU game Feb. 23, Sec. 11, Row 3, Seats 15 & 16, $12/ticket. Giersch, 899-6005.

BESELER ENLARGER, Darkroom Pro, sink, etc., $350 OBO; Kenmore dehumidifier, like new, $40. Shields, 286-5917.

BAND SAW, 1.5-hp, mobile stand; 12-in. Delta planer, dust collector, 610-cfm, 1-hp. Hanson, 299-6421.

NEW "STARWARS ROGUE LEADER" for Nintendo Cube, including guide book, opened, never used, best offer accepted. Brannon, 452-8707.

LASER RANGEFINDER, Bushnell YardagePro 400, $90; upright freezer, 12-cu. ft., $50. Creighton, 292-6805.

CHRISTMAS TREE, 6-ft., artificial, in box, $35; small pet carrier, $15. Kettleborough, 293-4503.

BABY ITEMS: stroller, $20; crib, $65; Little Tykes workshop, $35; L.L. Bean baby backpack, $45; other misc. items. Heald, 281-7885.

ROLLTOP DESK, 1910-1920 vintage, oak, excellent condition, $1,600. McConkey, 275-6636.

UTILITY TILT TRAILER, new, 4' x 8', 1,650-lbs. capacity, $576; w/side racks & spare tire, $850. Gonzales, 823-2081.

DINETTE SET, 46-in., Formica w/wood trim, 4 chairs, $75 OBO; 6-ft. aluminum stepladder, $15. Pena, 271-5222.

MOVING BOXES, everything from dishes to book boxes, free. Smith, 244-8346.

DINETTE SET, w/extension leaf & 4 chairs, original price, $1,400, asking $350 OBO. Chavez, 275-0490.

TELEVISION, 20-in. Sony Trinitron, $50; IKEA dining table, w/4 Windsor chairs, $70; Kenwood stereo, CD/cassette, AM/FM tuner, w/speakers, $20. Adalsteinsson, 925-443-8310.

CANON BUBBLE-JET PRINTER, $25; 2 Mustek scanners, $35 ea.; PC/Mac USB Kensington track ball, $10; bread machine, $25; hammered dulcimer w/extras, $700. Ayers, 888-8922.

TABLE, butcher block, w/4 chairs, $275; desk, $90; matching twin headboards, $75 ea.; Knaack tool box, $150. Phelps, 821-1151.

HOMEMADE TRAILER, heavy-duty, $75 OBO; electric sidewalk snow-thrower, $50 OBO. Chavez, 842-6374.

TIMESHARE: Las Vegas, available Dec. 23 thru Dec. 26, 2001, sleeps 4 people, need to sell time or lose. Bitela, 291-0579.

DANISH BEDROOM FURNITURE, TEMA, queen bed, w/headboard, matching dresser, floor lamp, teak wood, excellent condition, $600. Wilcoxen, 296-8295.

ENTERTAINMENT CENTER, 3 pieces, accomodates a 46-in. TV, red oak, w/glass doors, 1 yr. old, cost $3,000, asking, $1,500; women's Huffy 10-spd. bike, ridden approximately 4 blocks, paid $150, asking $85. Beller, 881-4047.

ARTIFICIAL CHRISTMAS TREE, 6-1/2-ft., $25; solid oak Homestead House bunkbeds w/side rails, mattresses, ladder, $400. Garrison, 292-8973.

ENTERTAINMENT CENTER, w/drawers & bookshelves, 7-1/2-ft. high, white-washed wood, like new, $1,500 OBO. Baldo-Pulaski, 345-0432.

PIANO, Koehler & Campbell, very good condition $500. Rhodes, 899-5444, evenings, ask for Peggy.

How to submit classified ads

DEADLINE: Friday noon before week of publication unless changed by holiday. Submit by one of these methods:

- **E-MAIL: classads@sandia. gov**
- **FAX: 844-0645**
- **MAIL: MS 0165 (Dept. 12640)**
- **DELIVER: Bldg. 811 Lobby**
- **INTERNAL WEB: On Internal Web homepage, click on News Center, then on Lab News frame, and then on the very top of Lab News homepage "Submit a Classified Ad." If you have questions, call 844-4902.**

Because of space constraints, ads will be printed on a first-come basis.

Ad rules

1. Limit 18 words, including last name and home phone (We will edit longer ads).
2. Include organization and full name with the ad submission.
3. Submit the ad in writing. No phone-ins.
4. Type or print ad legibly; use accepted abbreviations.
5. **One ad per issue.**
6. We will not run the same ad more than twice.
7. No "for rent" ads except for employees on temporary assignment.
8. No commercial ads.
9. For active and retired Sandians and DOE employees.
10. Housing listed for sale is available without regard to race, creed, color, or national origin.
11. Work Wanted ads limited to student-aged children of employees.
12. **We reserve the right not to publish an ad.**

WATERBED, king, 6-drawer, headboard, padded rails, 1 yr. old, mattress, liner, & heater, paid $150, asking $60 for all. Schuster, 828-3415.

TELESCOPE, Simmons, excellent condition, great gift idea, $75. Glidewell, 298-0587.

IRON WOOD STOVE, never used, $150; Pillsbury breadmaker, $50. Riley, 869-2119.

G.H. ROTH PRINTS, "Ballet Picture II" & "The Extra Effort," both framed. Hubbard, 291-8463.

WOMEN'S GOLF CLUBS, woods, irons, putter, bag, pull cart, lightly used. Spray, 821-5877.

DESK & CREDENZA, large, natural oak $500; Lazy Boy office chair, $100; Hon filing cabinet, $25. Nist, 275-1788.

2-1/4 CARAT GUARD RINGS, Butterfield appraisal, $2,500, asking $1,200 OBO. Charles, 332-3923.

TRANSPORTATION

'87 TOYOTA COROLLA, excellent condition, 2-dr., 5-spd., red, 100K miles, $2,800 OBO. Walters, 857-9767.

THREE ROTARY CARS, '72 Mazda RX3 wagon, sedan, & coupe, need work, owned by 1 family. Mayer 294-3368.

'87 OLDS CUTLASS CIERRA, 140K, 3.8L V6, 2-dr., coupe, AM/FM, runs great, $1,700. Jones, 797-4894.

'77 280Z COUPE, AT, new tires, alternator & tune-up, runs well, great classic project, $1,500 OBO. Bolden, 530-297-5123.

'96 OLDS CUTLASS SUPREME, dark green, V6, leather interior, loaded, pampered, 59K miles, $6,600. Philbin, 828-2414.

'96 CHEVY EXT. CAB Z71, Silverado, 4x4, bed liner, matching shell, tow package, CD, green w/tan, new condition, 49K miles, $16,750 OBO. Dwyer, 271-0741.

'93 CADILLAC SEDAN DEVILLE, 89K miles, leather, great condition. $7,800. Bozone, 242-8295.

'94 PONTIAC GRAND PRIX, 4-dr., AT, PW, AC, maroon, excellent cond., $3,500 OBO. Knudson, 856-6377.

'94 FORD EXPLORER, XLT 5-spd., 4x4, PW, PL, AC, white, excellent condition, 88K miles, $6,995 OBO. Romero, 286-0885.

'93 JEEP GRAND CHEROKEE LAREDO, 4x4, 5.2L engine, well maintained, CD, AC, PW, PS, cruise, digital headliner, tow package, $6,200. Zender, 294-8210.

'93 GMC SIERRA SLE PICKUP, ext. cab, 115K miles, 5-spd., good condition, $6,400. Hopkins, 286-7823.

'89 HONDA CIVIC DX, 5-spd., 4-dr. sedan, white, 108K miles, AC, AM/FM cassette, runs great, $2,950. Marley, 858-1999.

'99 TOYOTA AVALON XL, excellent condition, loaded, new tires, 37K miles, $17,700. Coughenour, 294-3528.

'90 TOYOTA CELICA GT, coupe, 2.2L, 5-spd., 85K, AC, CD changer, good condition, loaded, runs great, $4,000. Tyner, 294-5289.

'67 & '68 VOLKSWAGEN BEETLES, one runs great, other for parts, $400 for both OBO. Breckenridge, 797-4901.

'90 MERCURY COUGAR LS, new transmission, tires & brakes, all digital w/sunroof, needs head gaskets & thermostat, great shape, $950. Giacci, 203-4279.

'95 CHRYSLER TOWN & COUNTRY, 118K miles leather, quad seating, new tires, cell phone, $7,300 OBO. Lipke, 271-0645.

'90 JEEP WRANGLER, 6-cyl., 5-spd., PS, CB, hard/soft tops, custom tires/wheels, 160K miles, good shape, asking $4,200. Terry, 237-2288.

'87 WHITE JEEP CHEROKEE, 5-spd., 4x4, 4-dr., AC, cruise, IW, AM/FM/cassette, 4.0L, 120K miles $4,000 OBO. Perlinski, 286-5633, ask for Tony.

'87 TOYOTA COROLLA, ex.cond., 2-dr., 5-spd., red, 100K miles, $2,800 OBO. Walters, 857-9767.

'94 HONDA ACCORD LX, 4-dr., AT, ABS, 84K miles, original owner, dealer maintained, clean, runs perfect, $6,950. Ralph, 292-5160.

'98 DODGE RAM 1500, 4x4, clubcab, Laramie SLT, fully loaded, AT, V8, tilt, cruise, AM/FM/CD, cassette, leather seats, $18,500 OBO. Vigil, 880-0026.

'98 CHEVY 4X4, 1/2-ton, original owner, ext. cab, nerf bars, AC, perfect condition, short bed, towing package, 5.0L, 5-spd., AM/FM/CD, 60/40 bench, beige/blue, 25K miles, ext. warrenty, $17,900 OBO. Honest, 832-6040 or 291-0182.

'89 DODGE GRAND CARAVAN LE, loaded, excellent condition, 120K miles,$2,800. Martinez, 856-6153.

'56 PACKARD "400", yellow & black, extra parts, good project car, call for more info, $2,500. Cleland, 281-2228.

'89 TOYOTA COROLLA WAGON, AT, 45K miles, excellent condition interior & exterior, always garaged, white/blue, $4,000. Thomas, 471-1036.

'96 FORD THUNDERBIRD, fully loaded, low mileage, must sell $6,500 OBO. Vallejos, 864-1974.

'01 JEEP WRANGLER SPORT, 4x4, 14K miles, 5-spd., 6-cyl., AC, gray exterior, gray interior, cloth bucket seats, soft top, AM/FM/cassette, 4.0L, theft-deterrent system. Fox, 237-7254, ask for Gloria.

RECREATION

'98 ARCTIC CAT ATV, 500 4X4, AT, very good condition. Aguilar, 873-1261.

REAL ESTATE

3-4-BDR. TOWNHOME, the Shores, 3-level, 1,900 sq. ft., 3-1/2 baths, full basement, hardwood floors, new carpet & paint, backyard faces pond area, Northeast location. Hoffman, 922-9641.

SW-STYLE HOME in Buena Vista, Colo. 4 acres, views, horses okay, 1/2-mile from national forest, $229,000. Everett, 268-7818.

WANTED

COLLEGE STUDENT, needed to pick up & watch children after school, 3:30-6 p.m., 3-5 days/week. Kajder, 298-9353.

BASS PLAYER to substitute occasionally in intermediate jazz practice/jam session; we play mostly from the Real Book. Tucker, 281-8342.

TELESCOPE, larger aperture, 9 in. or larger, size, weight, age not important, must be in good condition. Campbell, 281-0744.

Frank New York says, 'Thanks, Sandia ECP and LEAP participants'

One morning, when Joaquin Garcia was eleven years old, his father went out for groceries and was never heard from again. Ever since that day, Joaquin planned on becoming a detective when he grew up, in order to find his father.

Today, Joaquin is 31 years old. Because he has cerebral palsy, he has spent most of his life living in group homes, with foster parents, in nursing homes or with relatives. All his life, teachers and counselors told him to focus on survival skills because he would never be able to read or write. Determined to realize his dream of writing detective stories, he set out to prove them all wrong.

Eventually, his quest led him to a United Way-funded agency specializing in innovative literacy programs. Thanks to an extremely dedicated and compassionate teacher, Joaquin is finally learning to read and write. In fact, he has written ten chapters in his first detective novel. The hero of the story is a detective named Frank New York, who just happens to use a wheelchair while performing heroic actions.

Thanks to the United Way and Joaquin's pure determination, Frank New York isn't the only hero of this story.

THE END

JOAQUIN GARCIA is realizing his dream of writing detective novels — with a hero named Frank New York — thanks to help and encouragement from a United Way-funded agency. The photo and text are reproduced from a double-page spread in the 2001 campaign brochure of the United Way of Central New Mexico.

Sandia employees carry on holiday giving traditions

By Janet Carpenter

The Energizer Bunny has nothing on Sandia employees. They keep on going and going and giving and giving. Even after responding to the Sept. 11 emergency, the annual food collections, and United Way campaigns you will find Sandia employees going to extra lengths to care for those less fortunate and in need.

During the holiday season, it has been a tradition for Sandia elves and angels to think about and take care of those in our community who would not otherwise have a happy holiday without help. The tradition continues. Although there are many ways employees are caring for others during the holiday, space allows presenting only a few. Here are some:

Public Relations and Communications Center 12600 members contributed gift donations for children in foster care at the center's annual holiday party. After consulting with Sandia Volunteer Project Leader Darlene Leonard (12650), center party organizers Sophia Garcia and Sandy Smallwood obtained a child's wish list from the State of New Mexico Children, Youth, and Family Services. Each year in New Mexico there are more than 30,000 reports of child abuse or neglect. Nearly 2,500 are in need of short- or long-term foster care. "Darlene told me that foster parents provide protection against harmful situations, structure, nurturing, and assistance in preparing the child to return to their home or to live with relatives or to be adopted," says Sandy.

Human Resources and Protection Services Div. 3000 staff members supported Project Linus this year during its annual Winterfest. Employees were asked to bring a new, handmade washable blanket, sewing materials or kits, or a gift certificate to purchase sewing materials. Project Linus began at Christmas 1995 when Karen Loucks of Colorado saw a picture of a young cancer patient holding her special "blankie." It has become an international program with 400 chapters located in the US, Canada, Australia, Mexico, England, and the Philippines and has distributed more than 250,000 blankets to children around the world in addition to those in the United States. The Albuquerque chapter of Project Linus covers all the local hospitals and a few in other parts of the state and through October 2001 has delivered more than 2,300 blankets. The blankets go to seriously ill or traumatized children to keep as their own.

Weapons Program Integration Dept. 2102 employees decided to provide as many items as possible listed on the Barrett House Wish List to help the Barrett Foundation continue to help homeless women and children build a future. Barrett House provides services to homeless women and children for a period of 21 days. All needs are met on an emergency basis — clothing, food, shelter, bus tokens, etc.

"In **Information Systems and Test Engineering Dept. 14407**, we get names from the Giving Tree at Coronado Shopping Center," says Lucille Ortiz (14407). "We each take a child's name and buy the gift the child asked for. We also have a giving tree in Bldg. 870 with tags listing names, desired toys and gifts, and clothing sizes. This is spreading throughout Div. 14000."

"For the seventh year, **Microsystems Science, Technology, and Components Center 1700** is providing Christmas gifts to the children and siblings of Christina Kent Day Nursery," says Carla Sanchez (1700). "A tag was placed on the Christmas tree in the Bldg. 858 lobby for each child listing his or her name, gender, age, pants size, shirt size, shoe size, and gift wish." Employees were asked to choose a tag, wrap a gift, attach the gift tag to the outside, and take the gift to Research Park before Dec. 12." Center 1700 bought gifts for 89 children, and last year the tags went quickly. Those who couldn't get a tag were asked to purchase items for the school, such as classroom supplies, outdoor toys, balls, etc. Holiday Committee members included Angie Madrid-Ritchey, Joanna Vigil, Cathy Nowlen, Ruth Lucero, Carol Gutierrez, Debra Chavez, Christi Willison, Christina Benavidez, Jillian Burgin, and Jeanne Wallace. "Thank you for helping make this a wonderful, though different, holiday season," says Carla. "And, thank you to each one of you who buys gifts for going that extra mile so working, low-income families can have a nice Christmas." Christina Kent is a nonprofit 501(c)3 organization providing child-care, early education and nutritional services for children from low income, working families.

(Continued on page 3)

SISTERS AND BEST FRIENDS — Two girls wait eagerly for their turn to pick out new shoes at Mervyn's department store as part of the annual Sandia Shoes for Kids program. Shoes for Kids is one of the many ways Sandians share their good fortune with others in the community. (Photo by Randy Montoya)

Coronado Club

The Coronado Club has **resumed its Friday lunch** schedule and after-work events (SERP events, lounge). SERP events that have begun again are: aerobics (T&Th at 5), chess (Wed at 5:30), yoga (Th at 5) and bridge (Th at 7).

* * *

C-Club's $8 **holiday dinner!** It's on Dec. 14, with dinner beginning at 6:30. The cost is $8 (including tax). The Roger Burns Trio will be the entertainment. Call the Coronado Club at 265-6791 for more info or to make reservations.

* * *

C-Club's **'kids' breakfast':** The Coronado Club will host a Children's Breakfast with Santa on Saturday, Dec. 15 (9-11). The cost is a donation of a canned good for families in need. Call the Coronado Club at 265- 6791 for more information.