MC4380A neutron generator delivered to Navy: A profile in successful integration

It's the first new neutron generator designed, qualified, and built at Sandia

By Will Keener

When Sandia delivered its first new batch of MC4380A neutron generators to the US Navy in August, it was the culmination of a cooperative effort involving Sandia's systems engineering, design, manufacturing, and testing groups that has taken 24 "sometimes tense" months to complete. In fact, the effort actually stretches further — to the mid-1990s, when DOE began to reconfigure its weapons complex.

"We have been thorough and rigorous, and we have set the bar high for others to emulate."

"This is the first new neutron generator designed, qualified, and built at Sandia and now delivered to a customer," says Mary Gonzales, who manages Sandia's Programs, Industrial and Product Engineering group (14401). She and colleagues Steve Barnhart, Manager of Neutron Generator Design Dept. 2561, and Bill Tedeschi, who managed W76-0 and W-88 Systems Engineering Dept. 2113 during the intense effort, find much to be pleased with in the completion

(Continued on page 4)

RECIPE FOR SUCCESS — Annie Nickerson (14404-4) places power supply fixtures for neutron generators into an oven at Sandia's Neutron Generator Production Facility. The latest generator was manufactured and delivered to the US Navy. (Photo by Randy Montoya)

Benefits Choices 2003

Four-page pull-out details benefits plan changes

The annual Open Enrollment period, during which employees and retirees can make changes to a number of their benefit options, is scheduled for Oct. 20-Nov. 9. For details on benefits changes, options available, and times and locations of informational meetings, see the four-page pull-out spread beginning on **page 7.**

Sandia LabNews

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Sandia National Laboratories

Labs helping shape science and tech aspects of nation's Homeland Security Dept.

T.J. Allard takes over as chief of Labs' Homeland Security office

By Bill Murphy

T.J. Allard, who most recently has served as deputy director of Executive Staff Center 12100, has been named to succeed Dave Nokes as head of Sandia's Homeland Security office. The move follows Dave's promotion to VP of National Security & Arms Control Division 5000.

The Homeland Security office provides a point of contact between the Labs and the US Homeland Security office led by Governor Tom Ridge — and will serve the same function between Sandia and the Department of Homeland Security (DHS), if the department proposed by President Bush is approved by Congress. If and when the DHS takes shape, T.J.'s office will serve as the front door through which DHS-related R&D work will come to the Labs.

While Congress hasn't yet approved estab-

(Continued on page 6)

Sandia's Jeff Brinker wins DOE's prestigious E.O. Lawrence Award

Creative researcher honored for innovations in nanostructured materials

By Neal Singer

Jeff Brinker will be one of seven scientists awarded the Department of Energy's E.O. Lawrence Award in a ceremony on Oct. 28 in Washington, D.C.

The award — one of the highest honors bestowed upon researchers by DOE — was announced by Secretary of Energy Spencer Abraham last Thursday, Sept. 16.

"The worlds — and nanoworlds — of Jeff Brinker."
Story on **page 4.**

Jeff is a senior scientist at Sandia (in Chemical Synthesis and Nanomaterials Dept. 1846) and professor of chemical and nuclear engineering and chemistry at the University of New Mexico.

He will be honored for innovations in materials science that created nanostructured materials with applications in energy, manufacturing, defense, and medicine.

The award, established in 1959, includes a citation, gold medal, and a $25,000 prize. It is offered in seven categories of science for outstanding contributions in the field of atomic energy, broadly defined. It is named in memory of physicist Ernest Orlando Lawrence who invented the cyclotron, a particle accelerator, and received the Nobel Prize in physics in 1939.

JEFF BRINKER

"We are all enriched by the contributions researchers [such as Jeff] have made," Secretary Abraham said.

Said Sandia President Paul Robinson, "I am delighted that the Department of Energy has selected Jeff Brinker for the Lawrence award. He is truly 'a scientist's scientist and an engineer's engineer.' Throughout his career he has worked at the forefront of mate-

(Continued on page 5)

Sandia researchers Siebers and Steeper win honors from SAE 3

RAMPART-based analysis tool may help secure ranches, dairies 11

12 Labs' tests of MOLE detector find results "no better than random"

13 Julia Phillips wins Horizon Award for encouraging girls in science

What's What

A few people — none of much importance, really — have asked me what former *Lab News* columnist Larry Perrine (12640) is doing since he turned over this vital task to me late last year. He's actually involved to some extent in just about everything our Media Relations and Communications group does today, including editing the Sandia annual report, leading the production of Sandia exhibits, dabbling some days in media relations, writing an occasional *Lab News* story, working on some joint public relations projects with DOE/NNSA and Lockheed Martin, and helping keep fresh information on Sandia's external website.

He claims he's involved in so many different things because he's versatile, but some of us suspect it's really because the boss doesn't trust him to get too involved in anything, and other people involved in all those things can kind of keep an eye on him. Regardless, because he does somehow manage to stick his nose in so many different public relations activities, he's tagged himself with a new moniker — "flack of all trades."

* * *

And speaking of foss. . . — uh, colleagues — a letter from former PR chief Jim Mitchell showed up in my mailbox recently. With a tingle of dread, wondering what I'd misspelled, misstated, or otherwise just missed, I opened it. Inside was a completed USA Today crossword puzzle (no erasures) with the highlighted 49-down reading "Sandia" — the answer to "___ National Laboratories."

And a note from Jim: "May I presume this is a new PR initiative, released just in time for October 1 rewards?"

Hmmmm. . . wish I'd thought of that.

* * *

Journalists are sometimes referred to as "ink-stained wretches of the press," and colleague and Media Relations Team Leader Chris Miller (12640), who seems to be ink-pen-in-the-pocket-challenged, sent around a note recently noting that Cornell University is out with a 12-page publication that describes lab-tested details on removing nearly 250 kinds of stains.

Protocol colleague Paula Schoeneman (12650) twisted the pen a bit with the response: "Chris, every seasoned Sandian knows how to keep ink stains out of shirts — wear pocket protectors."

Which raises the question: Have pocket protectors pretty much disappeared because personal digital assistants have superseded pens?

* * *

Jerry Knorovsky (1833) doesn't think much of the congressional plan to develop a "blue-ribbon" committee to look into the national security and intelligence agencies' alleged failure to cooperate enough to head off 9/11. This would be, he wrote, "a BLUE-ribbon committee investigating RED tape that will most likely wind up with a WHITEwash."

* * *

The "where am I and what is this place" prize for the week goes to Chuck Meyers' (1030) entry. He says a colleague from the Tokyo Institute of Technology e-mailed: "Another laboratory I wish to visit is Sandia in Arizona."

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

Four changes in Director assignments announced

Executive VP Joan Woodard, Senior VP Tom Hunter, and VP 2000 John Stichman have announced several changes in director assignments, effective Oct. 4.

Les Shephard moves from Director, Executive Staff (12100), to Director, Stockpile Resource Center 2900.

Melissa Murphy moves from Director of Stockpile Resource Center 2900 to Chief Information Officer and Director, Personal Computer, Library, and Records Center 9600.

Pace VanDevender moves from Chief Information Officer (9400) to Director, Executive Staff (12100).

After 40 years of service to Sandia, Herb Pitts, Director of Personal Computing, Library, and Records Center 9600, has agreed to accept a special assignment in Div. 9000 to support these transitions prior to his retirement at year's end.

"We want to express our deepest appreciation for the service these individuals have rendered in their current positions," said the Sept. 19 announcement.

LES SHEPHARD

MELISSA MURPHY

PACE VANDEVENDER

HERB PITTS

Sandia LabNews

Sandia National Laboratories

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LOCKHEED MARTIN

Sandia's new International Programs Building is dedicated

FLYING RIBBON — Sections of the just-cut ribbon are caught in mid-air as Sandia's new International Programs Building is dedicated in a ribbon cutting ceremony Sept. 24. From left, Sandia President and Labs Director C. Paul Robinson (in background); building developer Karl Amelang, CEO of Amelang Partners, Inc.; Roger Hagengruber, Senior VP for Special Projects; and Dori Ellis, Director of International Security Center 5300. Dori officiated at the ceremonies. The handsome new three-story, 65,000-square-foot building, on the east side of the Sandia Science & Technology Park outside the Eubank Gate, will house operations of the International Security Center, including the Cooperative Monitoring Center and other international programs in US-Russian nuclear security, international safeguards and security, regional security, and arms control support. (Photo by Bill Doty)

Dennis Siebers receiving prestigious SAE award for paper on controlling diesel soot formation

By Nancy Garcia

Stringent new emissions regulations calling for a factor of 10 reduction in emissions from diesel engines before the end of the decade are creating enormous challenges for engine designers. If the new regulations are to be met, engine-out emissions must be drastically reduced, and effective exhaust aftertreatment systems must be developed.

DENNIS SIEBERS

Dennis Siebers (8362) and his postdoctoral colleague Brian Higgins (now at California Polytechnic State University) are receiving the prestigious Society of Automotive Engineers 2001 Harry LeVan Horning Memorial Award this month for a paper they coauthored on a previously unexplored, but pivotal, factor controlling soot formation in diesel engines. The award will be presented at the SAE Powertrain and Fluid Systems Conference Oct. 21–24 in San Diego.

Research by Dennis and Brian focused on determining how various engine parameters affect the "lift-off length" on diesel fuel jets. The lift-off length, a term derived from atmospheric pressure gas jet flames, is the distance between the injector tip and the initial location of combustion on a diesel fuel jet. The lift-off length is important because it controls how much air is mixed with the injected diesel fuel prior to any combustion. Dennis and Brian showed that the amount of soot formed in a fuel jet decreases almost linearly with an increase in the amount of fuel and air premixed upstream of the lift-off length. Moreover, their research showed how the picture of diesel combustion developed previously by their colleague John Dec (8362) scales over a wide range of diesel operating conditions.

"The research is leading to a better understanding of how various parameters such as compression ratio, injection pressure, injector tip orifice size, turbocharging, and exhaust-gas-recirculation affect diesel combustion and emissions formation processes."

"We're trying to provide a knowledge base that will allow engine designers to control and minimize pollutant emissions from diesel engines," Dennis says. "The research is leading to a better understanding of how various parameters such as compression ratio, injection pressure, injector tip orifice size, turbocharging, and exhaust-gas-recirculation affect diesel combustion and emissions formation processes."

Designers at Caterpillar, an industrial partner in this research, are already refining their engine design models based on the combustion researchers' findings.

The research leading to the award was carried out in 2000 under two cooperative research and development agreements (CRADAs) with funding from DOE's FreedomCAR and Vehicle Technologies Program. The CRADA partners are GM, Ford, Daimler-Chrysler, Caterpillar, Cummins, and Detroit Diesel.

With the addition of Lyle Pickett (8362) as a new Combustion Research Facility staff member, the research continues and is receiving attention in other quarters as well. The American Society of Mechanical Engineers – Internal Combustion Engine section announced that a paper by Lyle and Dennis on the effects of the injector tip orifice diameter on the structure and scaling of diesel fuel jets was selected as a best paper at the 2001 annual IC engines meeting. The award was presented at the recent ASME meeting held in New Orleans.

Sandia CaliforniaNews

California site honors its DOE Weapons Award of Excellence winners

SHAKING HANDS following the 2001 DOE Weapons Award of Excellence annual ceremony in California, Mim John (8000) congratulates Bill Even (8722), who was on one of 21 teams recognized at the July 30 event. (All award recipients were listed in the June 28 *Lab News*.) Both Sr. VP Tom Hunter (9000) and David Crandall, deputy administrator of the National Nuclear Security Administration, officiated along with Mim. The seven Sandians who won individual awards were Al Baker (8222), Ronald Bentley (9700), John Brainard (2564), Mike Chiesa (8727), Ling William (9813), Marcus Martinez (2131), and Thomas Massis (2552). The award recognizes achievements in stockpile stewardship. (Photo by Bud Pelletier)

Dick Steeper's presentation on iso-octane/ketone mixtures wins SAE award of excellence

By Nancy Garcia

Some six months after this year's Society of Automotive Engineers World Congress in Detroit, Dick Steeper (8362) has received word that he was selected to receive an Excellence in Oral Presentation Award for his paper entitled "Examination of Iso-Octane/Ketone Mixtures for Quantitative LIF Measurements in a DISI Engine." The paper was presented in a session there on direct-injection, spark-ignition engines.

Dick used a bench-top evaporation experiment to highlight a frequently overlooked error associated with laser-induced fluorescence measurements of fuel distributions in internal combustion engines. Commonly, a fluorescent tracer is added to a nonfluorescent fuel in order to track the fuel during in-cylinder evaporation and mixing with air. But to make such measurements quantitative, the tracer and fuel must co-evaporate. The bench-top experiments demonstrated that some commonly used fuel-tracer mixtures do not properly co-evaporate, and revealed new mixtures that resolve this problem. Quantitative measurements of fuel distributions using the improved fuel-tracer mixtures were then demonstrated in a fired research engine.

DICK STEEPER

"Obtaining accurate fuel distribution data is important for our understanding of direct-injection engines," Dick says. "Combustion quality, fuel efficiency, and emissions formation all depend directly on the fuel-air mixing process."

Dick is continuing to use laser-induced fluorescence techniques in his optically accessible, light-duty research engine as part of a project focused on the homogeneous-charge, compression-ignition combustion strategy. This strategy is being investigated at the Combustion Research Facility for transportation applications in both his lab and the lab of his colleague John Dec (8362).

Neutron

(Continued from page 1)

of this project.

So does Sandia's President Paul Robinson, who reported to Congress about the effort this summer. In testimony to a House of Representatives subcommittee in June, Paul selected the MC4380A neutron generator qualification program as an example of how science-based stockpile stewardship is working.

"A combination of advanced computational simulations. . . and a comprehensive suite of several kinds of non-nuclear tests made it possible for the first time in the history of the program to qualify a neutron generator design. . . without underground nuclear testing," Paul told the subcommittee.

Wanted: Design margin

Designed as a component of the Navy's submarine-launched W-76-0/Mk4 Trident warhead, the MC4380A got its start when Sandia and the Navy were testing a predecessor, the MC4380. Both customer and supplier came to the realization that additional design margin was needed for the device. A neutron generator must be designed for ruggedness in severe environments, including acceleration, shock, vibration, high voltage, radiation, and mechanical impulse, explains Steve.

Analysis of test data from the earlier version led both Sandia and the Navy to see the need for enhanced design margin for the generator. "From an engineering standpoint, we knew we needed to modify the component design to achieve better margins," Bill says.

Sandia's weapons program is arranged so that Bill's team takes inputs from the Navy customer and translates them into a number of detailed formal component requirements documents for design and production. Steve's team takes the requirements, creates a body of design drawings and documents, and works with Sandia's manufacturing group on development and actual production of the product. "In this case, we worked on a new design in a new factory," says Steve.

As a part of the DOE reconfiguration effort, a neutron generator factory at Pinellas, Fla., was closed and the manufacturing capabilities were moved to Sandia at Albuquerque in the mid-1990s. "Sandia brought 86 folks from Pinellas to Albuquerque with neutron generator product and hardware knowledge in the design and production areas," Bill says. "At the same time we also matrixed with many other parts of the Sandia infrastructure."

In addition to consideration of "normal" environments like vibrations while riding on a submarine, or abnormal environments like the remote possibility that a warhead might be subjected to an accident, come the demands made by "hostile" environments, like exposure to high radiation levels. "We knew the hostile-environment requirements would be the challenge on this component," says Mary.

STAMP OF APPROVAL — Stacy Kubasek, Quality Assurance Specialist at the Kirtland Site Office of the National Nuclear Security Administration, applies a certification stamp to a Sandia neutron generator as a part of product verification and acceptance process. The stamps are applied at several stages during the manufacture and final assembly, which is performed by Dept. 14404-5. (Photo by Randy Montoya)

Meeting requirements

Once prototype units began to come off the neutron generator assembly line, testers initiated the process of shaking, baking, and bombarding them to assure that the generators meet requirements. Sandia's Saturn and Hermes accelerators, the Annular Core Research Reactor, and the Sandia Pulsed Reactor are among many facilities used in the qualification stage. "We fully exercised Sandia's test facilities," says Mary. "If we had a tool here, it was well-used," adds Steve. Some tests were even conducted at other facilities, under Sandia direction.

"We were very thorough in our radiation effects testing and analyses of the hardware," says Bill. "We focused on it to ensure we met precise neutron output requirements during these severe environments. Historically, we would have exposed a small number of generators in a number of underground nuclear effects tests. Given the test moratorium, we conducted more than 1,000 above-ground tests in radiation effects facilities on various aspects of the generator design.

The team also conducted an unprecedented number of computer-based simulations — from simple one-dimensional models to sophisticated three-dimensional state-of-the-art ASCI models — to understand from the macro- to the molecular-level how the design would respond to the radiation. The MC4380A project provided a real success story, demonstrating the improved technical basis and confidence gains from integrating testing and ASCI modeling.

Managing the approach

A number of management strategies and tactics were also helpful in keeping the MC4380A on track for delivery. Two peer reviews, for example, were a part of the process — one early in the schedule and a second toward the end. Peers from both within Sandia and from other facilities looked at the system, design, radiation effects, and manufacturing aspects of the project. "The peer reviews made our processes better," says Mary.

A detailed project planning method was used with weekly luncheon meetings to review the critical path. The result was completion ahead of schedule. Sandians on the project completed work 23 days ahead of a DOE-required date. The project management team also met every Friday morning early to review ongoing progress and work any outstanding issues.

Final information meetings to document the work were held, first with Sandia management, then with NNSA and Navy customers. "All our work is consistent with Excellence in Engineering, Six Sigma, and other high engineering standards," Bill notes. "We have been thorough and rigorous, and we have set the bar high for others to emulate."

"There were peer reviews, program reviews, design reviews, and so on. This project was reviewed more than anything I've ever been involved with," Steve sums up. "If you think about it from a quality perspective, we came in ahead of schedule, we delivered under our target costs, and we met all technical requirements for performance."

Hundreds of Sandians helped make project a success

Those Sandians who helped make the MC4380A neutron generator project a success count in the hundreds. During the project there were three core teams — for systems, design, and production. Listed here are some of the staff members, managers, and organizations involved in this diverse task. The very list of organizations gives a clue to the complexity and integration needed to make the neutron generator project a success.

In Sandia's New Mexico Weapons System Engineering Center, Bill Tedeschi, Kaz Oishi, Jim Krupar, Roy Holt, and Joe Lopez (all 2113) and Hal Radloff (2132) worked on system integration issues. Tom Burford (2102) handled program integration and risk management efforts.

In the Energy Components Center, Steve Barnhart, Bob Stiers, Steve Montgomery, and Keith Vollmer (all 2561) were involved in the design, and Lou Malizia (2525) worked on power supply issues.

Among the core staff in the Neutron Generator Production Center were: Mary Gonzales, Muhammed El, Dick Diprima, and Joanna Lewis (all 14401); Marlene Uribe, Albert Garcia, and Theda Jean Williams (14402); Don Malbrough (14404); Moses Jones (14404-4); Jay Newquist (14404-5) and Anthony Wingate (14408).

Other supporting staff and organizations include: Pat Griffin, Gary Harms, and Mike Luker (all 6423), Applied Nuclear Technologies; Dave Bodette (6531) Mission Engineering and Analysis; Cindy Kajder (10262) Logistics Risk Management; Anthony R. Romero (16701) Supporting Technologies; Naomi Christensen (12323), Independent Surveillance Assessment and Statistics; Scott Gillespie (12326), Quality Engineering; and Bill Barrett and Frank Dean (15344), participating in the effort included Advanced Diagnostics and Production Testing (9122), Solid Mechanics Engineering (9126), Ceramic and Glass (14192), and Military Liaison (2913).

The worlds — and nanoworlds — of Jeff Brinker

By Neal Singer

If there is, in the future, when he becomes *really* famous, a market for a "Jeff Brinker doll" hermetically sealed in a glass hemisphere, it probably should gesture at the same speed as the slowly falling imitation snowflakes inside souvenir snow globes.

Jeff, a Sandia senior scientist, professor at the University of New Mexico, and now winner of DOE's prestigious E.O. Lawrence award (see page one), is not the fast-moving, quick-talking person his large number of publications — many in *Nature* and *Science* — and array of students and graduate students might lead one to assume.

Instead, he speaks so slowly it almost seems he is in a dream.

"It doesn't seems slow to me," he says, "but when I gave a talk to an elderly audience, I noticed they loved me more than the other speakers because I was the easiest to understand."

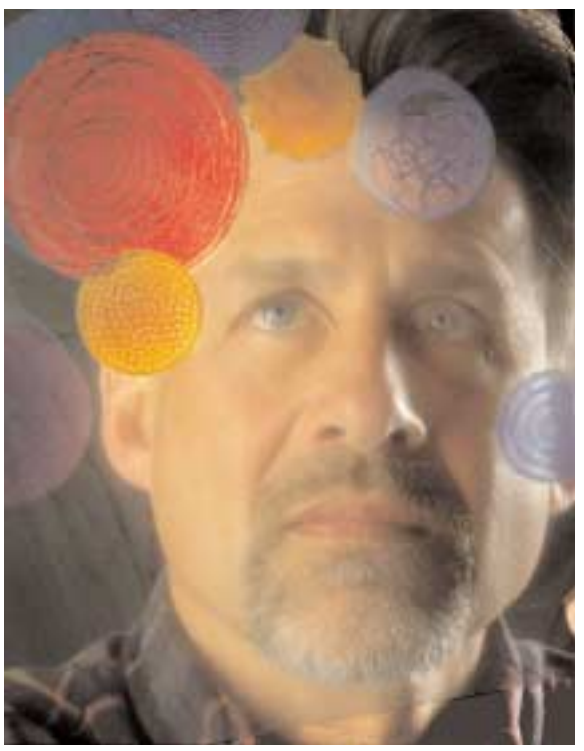
". . . every day you make something that no one's ever made before."

If it's a dream, it has elegance. For example, "There's something beautiful about the [nano]materials we're making," he says. "I like building them at the molecular level and exerting control, but there's also the outcome of these structures, which I think are [visually] compelling."

The work, he says, "captures my attention and imagination, and students and postdocs seem fascinated as well, because every day you make something that no one's ever made before. It's like cooking, as though you're fine-tuning a recipe."

He says this sitting sockless (because it's summer) in comfortable-looking thick-bottomed clogs with backs. He looks at his wristwatch, which is high-tech, then at his interviewer, through distinctive rectangular glasses frames ("techno-nerd," he says deprecatingly) that he bought while working on a project at the University of Paris. He looks like a person who has created his own private world and, within limits, likes it — perhaps the result of an imagination developed in solitude.

As a child in a small town in Pennsylvania, he was often left alone by his parents — his father a traveling salesman and his mother an office manager and real estate salesperson. His mother had been valedictorian of her high school but unable



JEFF BRINKER observes representations of nanostructures created by his team. (Photo by Randy Montoya)

to go to college because of lack of money, and, he recalls, "Our family was at the low end of the wealth spectrum in our neighborhood." So Jeff, early on, occupied himself with setting up a lab in the laundry room of his home, which was in the basement.

It was the boy's own little universe. "I got to do . . . pretty much . . . what I wanted," he says. He liked working with protozoa he collected from a nearby pond.

He attended Rutgers, a good but relatively low-status university compared to Harvard or Cornell (where some of his school chums went), but that did not mean he was without ambition: "I seem mellow but am actually quite competitive."

The head of Rutger's ceramic engineering department was, as it happened, a handball partner of Jeff's energetic dad and had taken the then-high school sophomore into a Rutgers glass lab. Jeff saw a fascinating apparatus where students subjected glass to different pressures and stresses and measured them.

"I was hooked," he says.

It seemed natural to go to Rutgers, which offered him early admission and a free ride.

In college, his advisor was always busy, so "I was always left to do what I wanted to do," Jeff says.

He stayed at Rutgers to achieve his master's and doctorate degrees. It was simplest, the faculty didn't mind, and he could pursue his developing interests in rock climbing, fly fishing, and skiing.

These were in fact the reasons that Jeff came to Sandia. "Most places you could do research in glass were not in the mountains," he says.

He had gone to a talk at Rutgers by a Sandian, Cliff Ballard, whose overhead projector slides showed something of New Mexico. Jeff had hardly heard of Sandia — "it was low profile" — but because glasswork then under the direction of manager (now VP) Bob Eagan seemed challenging, and mountains were readily available, the necessary elements for happiness seemed present. He applied.

"At Sandia," he says, "I somehow have been able to chart my own course. I've never felt forced to do anything."

Sandia does have certain requirements, but in his recently appointed position at UNM, Jeff finds he can do what he wants in a new way, aided by seven students and seven postdocs. "I don't have to fit that work into the same context," he says, "so hopefully it's the best of both worlds — if I can work it." The downside, he says, is that "I have two bosses and they each want 100 percent."

He still has a BMW he bought for $3,000 in 1972 and has maintained to this day — the type of care he bestows on possessions he values. "I like things that work and fit," he says.

Among his many projects is one with New York's Metropolitan Museum of Art to use thin films to protect the art of antiquity against water and corrosion.

His early sol-gel research (described in the accompanying article that begins on page 1) became material for a textbook that, despite rapid advances in the field, has never been updated yet is now in its fifth printing.

Anyone interested in an easily digested version of Jeff's more recent scientific travels — which form a kind of scientific novel, with each chapter showing further advances in his group's nanotechnology work — can go to the Sandia web site (www.sandia.gov; then "news center," "news releases," and key in " Brinker" in the search engine) or Jeff's group's website (www.unm.edu/~solgel).

Sandians Duane Dimos and Kay Hays put together and submitted the successful Lawrence award application.

Lawrence award

(Continued from page 1)

rials science research and has produced many advances both in understanding of materials and in practical applications. In addition to his pioneering work in sol-gel technology, which made possible the lowest density structures ever created, Jeff's leadership in mastering nature's secrets are extraordinary. His development of materials that mimic the structure of abalone sea-shells makes it possible to build tough, lightweight structures or coatings that, because of their inherent microstructures, can resist cracking.

"Jeff has established a new role model at Sandia National Laboratories — in addition to being a Senior Scientist at the Laboratory, he serves as Professor of Chemistry and Professor of Chemical and Nuclear Engineering at the University of New Mexico. This has enabled Jeff to mentor graduate students and to combine research interests with practical applications at the Laboratory. His technical papers are models of insight and clarity and his innovations in nanotechnology will only grow in importance as the United States launches what is the most ambitious scientific research program in decades."

"I've known Jeff for over 20 years," says Al Romig, VP for Science-Technology & Partnerships Div. 1000. "He's always been a thoughtful and creative scientist. I saw him move from more traditional inorganic to organic chemistry and from sol-gel to nanotechnology, migrating and evolving his ideas along the way. He's done a lot to bring visibility to Sandia. He's been a prolific author in *Science* and *Nature*; the first person we had to formally hold a full tenured professorship [at UNM] and be employed as a Sandia scientist at the same time. And he's worked diligently to develop the next generation's cadre of scientists through his university work. He's been a major organizer of symposiums and conferences, an engine of intellectual properties, one of our most prolific generators of patents, and a supernice guy whom you would be glad to call a friend or acquaintance."

Says Mike Cieslak, 1800 Director, "This is a wonderful recognition of what is really a professional lifetime's achievement by Jeff. While this award is primarily a confirmation of Jeff's creativity and vision, it is also a reflection of the ability we have at Sandia to support decades-long research. No one, not even a visionary like Jeff, could have imagined where we would be today when we first decided to invest in this area of materials science, and in Jeff, back in the 70s."

From Jello to souffles

Jeff's first work at Sandia involved sol-gels — Jello-like solutions heated at relatively low temperatures until they solidify into a glass-like material. The material is important (among other uses) in forming glass-like coatings over substrates too sensitive to be exposed to the temperatures needed to make real glass flow. This early work culminated in 1990 in the publication of *Sol-Gel Science* (with co-author George Scherer), a book that — though he and George never found the time to revise — remains the most highly cited reference in the field.

In the 1990s, Jeff moved from creating sol-gels into creating aerogels — materials extremely light because they are extensively penetrated by cave-like tunnels. He devised room-temperature techniques that were simple and inexpensive. The resultant concoctions — a kind of material scientist's soufflé — are the world's lightest solids. Jeff's group created them in collaboration with UNM researchers using a simple chemical trick that caused shrinkage by drying to be reversible, rather than by conventional high-temperature/pressure autoclaving with its hazards and costs.

The work overcame the 60-year-old barrier to commercial aerogel production and enabled the first preparation of aerogels as thin films.

The holes in grandma's blanket

Aerogels, because of their extraordinarily low thermal conductivities, were used on NASA's Pathfinder mission to insulate the Rover that explored Mars.

Aerogel films are also of interest for coatings needed for future generations of microelectronic devices.

But it wasn't enough merely to have an inexpensive aerogel; Jeff wanted better control over the size of its interior chambers, or pores. In the

(Continued on next page)

T.J. Allard

(Continued from page 1)

lishment of the new department, T.J. says, several Sandians are on temporary assignment in Washington working on the DHS transition team. That's the cross-governmental effort to forge a diverse collection of homeland security-related organizations into a new 170,000-employee department with a broad charge to protect the nation from 21st century national security threats. The DHS plan proposed by the president includes provisions for a science and technology research and development capability, with much of that capability being drawn from existing DOE/NNSA laboratories.

Holly Dockery (5350), John Cummings (1000), and John Vitko (8100) are part of a team in the nation's capital developing DHS "roadmaps," in-depth analyses of the direction in which DHS needs to proceed in its mission areas. Holly is heading up a group developing an "international engagements" roadmap; John Vitko and his group are developing a "chemical defense" roadmap; and John Cummings is working the "critical infrastructures" roadmap.

At the same time, T.J. says, a number of Sandia's senior leaders, including VPs Dave Nokes, Mim John, Bob Eagan, Gerry Yonas, Al Romig, Jim Tegnelia, and Lynn Jones — with significant staff support — have formed a Sandia DHS transition team. The group has been meeting to discuss and shape Sandia's role in assisting in the start-up of the new department and the eventual relationship that will evolve among the DOE and NNSA laboratories and DHS.

T.J. notes that Sandia has been involved in antiterrorism work and homeland security issues for a long time.

". . . we're doing our part to help make sure that the science and technology aspects, the R&D aspects, of the Department of Homeland Security — if and when it is approved — are as complete and effective as they can possibly be."

T.J. Allard

"When we have a high level visitor [from Washington] we always tell them that we got involved in this work after the terrorist attack — not after the 9/11 attack, but after the Munich [Olympics] attack in 1972. That was a wake-up call for a lot of us at Sandia that international terrorism had taken on a new dimension and that we needed to begin to develop proactive measures to protect and secure our special [nuclear] assets, particularly overseas."

That work, and the Labs' subsequent nonproliferation and counterproliferation work, led naturally to development of expertise in the area of sensors, robotics, and related technologies.

In addition, Labs senior management in the mid-1990s identified infrastructure surety, emerging threats, and nonproliferation and materials control as key "business lines" — along with nuclear weapons-related work — for Sandia and created strategic business units to manage work in those areas.

As a result of the foresight stemming from the Labs' strategic planning process, T.J. says, Sandia was well-poised to serve the nation in response to 9/11.

"It's telling in itself that we created critical infrastructure and emerging threats SBUs several years before the 9/11 attacks brought those issues to the forefront of public concern," T.J. says.

With the heightened emphasis on homeland security in the wake of the 9/11 attacks, the Laboratory Leadership Team (LLT) considered whether it needed to change the Labs business structure — specifically, whether it should create a new strategic business unit focused on homeland security work. After studying the issue, LLT determined that retaining the four existing SBUs represents the best approach. That issue will be revisited periodically, T.J. says, to ensure that the Labs' organizational structure is always optimized to deliver work most effectively to its customers.

Because Sandia's homeland security-related work — estimated to be about $80 million for FY 2003 and increasing to perhaps $250 million within five years — cuts across all SBUs, T.J. will work closely with Executive VP Joan Woodard and her office.

The Sandia "vision" for its relationship with the DHS, T.J. says, is that DHS "looks like" DOE; that is, the NNSA (and thus its labs) would enter into a Joint Sponsorship relationship with the DHS. Under that relationship, the labs would receive a mission-level funding commitment and a focus in strength areas such as science and technology R&D and intelligence analysis.

"It's not clear that Congress will approve a new department [of homeland security] before the end of this session," T.J. says, "but we're doing our part to help make sure that the science and technology aspects, the R&D aspects, of the department — if and when it is approved — are as complete and effective as they can possibly be."

High-level visits and external events

Since the 9/11 terrorist attacks on the US, Sandia has hosted a number of visists from key national policy makers. Within days of the attack (see chart below) the Labs was briefing elected federal officials on technologies that could brought to bear immediately in the war on terrorism. Subsequent events have included a briefing in Washington for President Bush and a hosted visit and briefing for Homeland Security Director Tom Ridge.

Senator Bingaman, Congresswoman Wilson	Sept. 17
Senator Domenici (via videoconference)	Sept. 24
Robert Stevens (LMC President)	Oct. 19
Congressman Udall	Oct. 22
Washington Countering Terrorism Event	Nov. 13
Senate Armed Services Committee	Jan. 11
Senator Reid	Feb. 1
Washington Infrastructure Surety Event	Feb. 11
DOE Undersecretary Card	Feb. 12
Governor Ridge	Feb. 21
US Committee for the National Labs	April 18
President Bush "Countering Terrorism" Event	July 22
Maureen McCarthy (NNSA Chief Scientist)	July 31
OSTP	Aug. 19
Parney Albright (Office of Homeland Security)	Aug. 28
Antiterrorism conference	Sept. 23-27

Lawrence award

(Continued from preceding page)

mid 1990s he devised techniques to cheaply, easily, and precisely control the pore size of films for use as membranes, adsorbents, concentrators, and electrically insulating materials called dielectrics. Here he used simple evaporative methods to organize two-sided detergent-like molecules into intricate patterns as regular as the knitting on grandma's blanket (only more so). This pattern served as a mold around which silica solidified. Removal of the detergents then created a predictable series of holes — where strands of grandma's blanket used to be.

These seashells not sold at the seashore

The precise periodic porosity of these films has enabled the development of inorganic membranes with the best reported combination of selectivity and permeability. In addition, the small pores, regular distribution, and fully connected framework architecture has made these films attractive for low-dielectric-constant films for the next several generations of microelectronics.

But why settle merely for inorganic souffles? Jeff then extended his techniques to organic materials. He created nanocomposites that mimicked the hard/soft laminated construction of natural materials like sea shells, which due to their hardness, toughness, and strength have obvious advantages for materials design and construction. In a process akin to washing dishes, he used surfactant assemblies called micelles to organize both organic and inorganic precursors simultaneously.

But that still wasn't enough. Why have a simply created organic/inorganic composite mass with defined interior nanostructure — including controlled pore size, shape, and regularity — and not control the overall architecture of the material?

Ship-in-a-bottle constructions

The starting point for overall architectural control is a solution or colloidal suspension like that used to form films. Evaporation of the aerosolized droplets (like those formed using a simple humidifier) causes self-assembly to proceed radially inward. Any additives introduced into the solution are inevitably incorporated within the self-assembling droplet, enabling ship-in-the-bottle constructions. This approach has significant implications in a diverse range of technologies like drug delivery, cosmetics, catalysis, chromatography, and custom-designed pigments.

Intelligent ink

During the past several years, Jeff demonstrated the direct writing of functional self-assembled nanostructures applied through computer-driven pens and ink-jet printers. This approach, dubbed "intelligent ink," formed functional hierarchically organized structures in seconds and established the first link between computer-aided design and self-assembled nanostructures. Second came the self-assembly of photosensitive films that incorporated ultraviolet-sensitive molecules compartmentalized within periodic nanostructures. Varying the intensity of a simple ultraviolet light shone upon the material enabled researchers to control its wetting behavior, pore volume, pore size, and refractive index. This capability should enable standard lithographic procedures to be used both to pattern and define the structure and function of nanomaterials.

Nanostructured hosts

Most recently, Jeff used polymerizable surfactants to incorporate conjugated polymers in nanostructured hosts, enabling control of their charge and energy transfer necessary to advance the field of organic electronics.

Jeff has won five DOE Basic Energy Sciences Awards. In February 2002 he was elected to the National Academy of Engineering.

Your benefits

Benefits Choices 2003: Open Enrollment is Oct. 20-Nov. 9

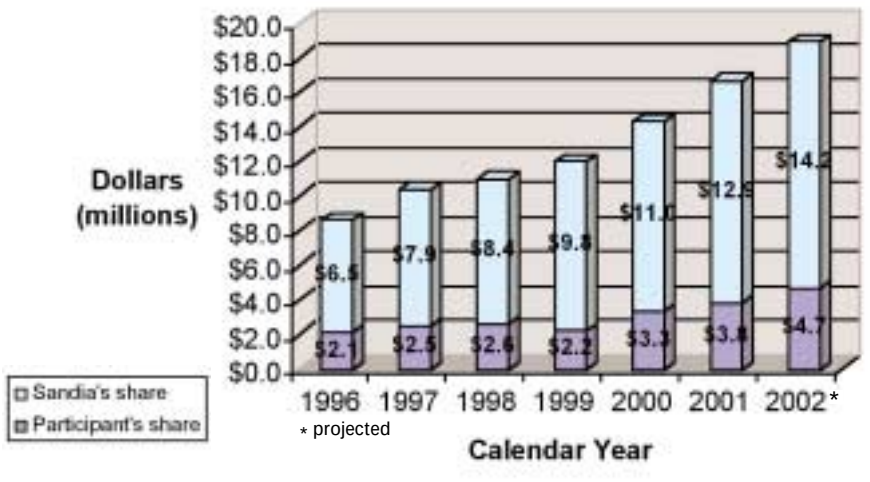
The material on the next four pages was provided by the Benefits Department.

Health care costs keep rising

For the past few years, Sandia's Benefits Department has informed you of health care costs that have been rising at increases not seen since the late '80s and early '90s. Health care consultants predict that employers could experience double-digit cost increases for the next several years.

Unfortunately, Sandia has not been immune from increasing health care costs. For example, the chart below indicates how outpatient prescription drug costs have increased dramatically. (Note: In 1996, the plan was an indemnity plan; in '97-'99, the plan was a Point-of-Service plan; today it is a PPO plan.)

Prescription drug plan cost distribution for the TOP PPO Plan

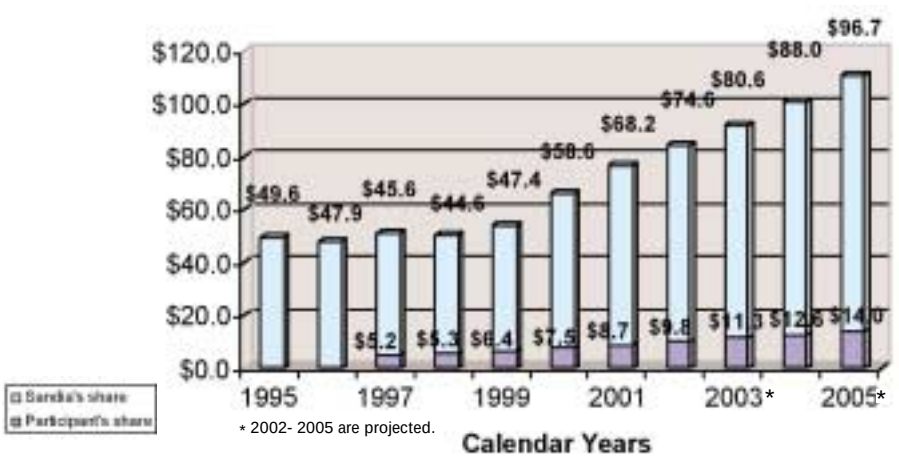


Internal factors driving Sandia's cost increases include our recent aggressive hiring program that increased employee numbers, as well as increasing retiree numbers. However, most factors are external to Sandia and outside of our control: increasing prescription drug utilization, an aging population resulting in higher utilization of care, improvements in medical technology, increasing labor costs (i.e., a shortage of nurses), and more aggressive physician reimbursement negotiations.

Last January, the Benefits Department made several changes to the health plans we offer, including adding a zero-premium plan for employees who may not have many medical expenses but want coverage against catastrophic medical costs. We also implemented a cost-sharing strategy whereby those who use a benefit more pay more. If we had not changed the plan designs so that those who use the plans more pay more, every employee's costs would have increased through higher premium-sharing. With the changes, premium-sharing has not gone up as much since costs have been transferred to those who utilize the plan, for example, through higher copays.

Health care premiums are increasing for CY 2003

Nonrepresented employees will see their current medical premium-share rise by 14% (except for the Basic PPO, which remains at no premium-share for employees); however, the non-represented employee premium payment in 2003 will amount to around the same percentage as it was in 2002. For example, a non-represented, Tier 1 (based on salary) employee enrolled in the CIGNA POS with coverage for a family of three pays a 2002 monthly premium share of $104. Since the full monthly premium is $704, the employee pays 15% of the overall total. For 2003, the employee monthly premium share will be $119. Since the full monthly premium will be $804, the employee will still pay 15%. In other words, on a premium-share basis, cost distribution is staying roughly the same, as depicted in the following chart:



For employees as well as retirees, Sandia pays the majority of the expense; for 2002, Sandia will pay approximately $74.6 million of the projected $84.4 million in health care costs. However, the growing cost of insuring retirees equitably currently troubles employers, Sandia included. Non-Medicare retirees cost more than employees for the same amount of coverage. For example, the per employee average Sandia paid in 2001 was $6,039, as compared to $7,925 per non-Medicare retiree.

Many changes in 2003 medical plan design are specifically designed to address the rising cost of retiree coverage. First, Sandia will require employees who retire after 12/31/02 to pay a specific percentage of premium share based on their years of service. Second, retirees' medical coverage will be coordinated differently with Medicare. Finally, premiums for non-Medicare retirees and survivors will be based on retiree and survivor group utilization, or "experience." (Note: Employees who retired prior to 1/1/95 do not pay premiums.) These retiree changes are more fully outlined in this *Lab News* article as well as the Benefits Choices 2003 Open Enrollment booklets, which will be sent to you in October.

Nonrepresented employee premiums

The cost of your medical coverage is based on your salary tier, the plan you choose, and the level of coverage you elect (employee only, family of two, family of three or more). The following chart outlines the current and new monthly premium-share amounts (effective Jan. 1, 2003) for non-represented employees:

Medical Plan	Tier 1 Up to $75K		Tier 2 $75K-$150K		Tier 3 Over $150K	
	2002	2003	2002	2003	2002	2003
BASIC PPO						
Employee only	$0	$0	$0	$0	$0	$0
Family of Two	$0	$0	$0	$0	$0	$0
Family of Three or More	$0	$0	$0	$0	$0	$0
INTERMEDIATE PPO						
Employee only	$25	$28	$36	$40	$47	$52
Family of Two	$49	$56	$70	$80	$91	$104
Family of Three or More	$65	$75	$94	$108	$123	$141
KAISER HMO						
Employee only	$25	$28	$36	$40	$47	$52
Family of Two	$49	$56	$70	$80	$91	$104
Family of Three or More	$65	$75	$94	$108	$123	$141
CIGNA POS						
Employee only	$39	$45	$50	$57	$61	$69
Family of Two	$78	$89	$99	$113	$120	$137
Family of Three or More	$104	$119	$133	$152	$162	$185
TOP PPO						
Employee only	$41	$47	$52	$59	$63	$71
Family of Two	$82	$93	$103	$117	$124	$141
Family of Three or More	$109	$125	$138	$158	$167	$191

NOTE: Eligible nonrepresented students pay the Tier 1 amounts

SPA-represented employee premiums

The cost of your medical coverage is based on the plan you choose and the level of coverage you elect (employee only, family of two, family of three or more). The following chart outlines the current and new monthly premium-share amounts (effective Jan. 1, 2003) for employees represented by the Security Police Association:

Medical Plan	2002	2003
BASIC PPO		
Employee only	$0	$0
Family of Two	$0	$0
Family of Three or More	$0	$0
INTERMEDIATE PPO		
Employee only	$25	$28
Family of Two	$49	$56
Family of Three or More	$65	$75
CIGNA POS		
Employee only	$39	$45
Family of Two	$78	$89
Family of Three or More	$104	$119
TOP PPO		
Employee only	$41	$47
Family of Two	$82	$93
Family of Three or More	$109	$125

MTC- and OPEIU-represented employee premiums

The cost of your medical coverage is based on the plan you choose and the level of coverage you elect (employee only, family of two, family of three or more). The following chart outlines the current and new monthly premium-share amounts (effective Jan. 1, 2003) for employees represented by the Metal Trades Council and Office & Professional Employees International Union:

Medical Plan	2002	2003
BASIC PPO*		
Employee only	N/A	$0
Family of Two	N/A	$0
Family of Three or More	N/A	$0
INTERMEDIATE PPO*		
Employee only	N/A	$21
Family of Two	N/A	$42
Family of Three or More	N/A	$56
CIGNA POS		
Employee only	$21	$34
Family of Two	$41	$67
Family of Three or More	$56	$89
TOP PPO		
Employee only	$28	$35
Family of Two	$56	$70
Family of Three or More	$74	$94

** New plan option available for Jan. 1, 2003*

Note: MTC- and OPEIU-represented year-round students who are not covered by another medical plan will be eligible for medical coverage through Sandia effective Jan.1, 2003, and will pay the above amounts.

Deductions from biweekly paychecks

Monthly premium-share amounts will be deducted from your biweekly paycheck in two equal installments each month. These premiums can be deducted on a pre-tax or after-tax basis (refer to your Benefits Choices 2003 Open Enrollment booklet for more information). Note: Pre-tax premiums generate cost savings since medical premiums are deducted before any federal, state, or FICA taxes, thereby reducing your taxable income (since your premiums are not included as income).

Your benefits

Retirees: Premiums depend on when you retired

Retiree premium-share varies based on when you retired as well as the plan and the level of coverage you choose.

If you retired before Jan.1, 1995, you do not pay a premium-share for your medical coverage.

If you retired after Dec. 31, 1994, but before Jan. 1, 2003, you pay 10% of the full premium. The following chart outlines the current and new monthly premium-share amounts (effective Jan. 1, 2003) for those employees who retired after 12/31/94 and before 1/1/03:

Monthly Premium Rates

Retiree	Spouse/ Dependent	Sandia Basic PPO		Sandia Intermediate PPO		Sandia Top PPO		Lovelace Senior Plan/ CIGNA POS		Kaiser Permanente HMO/KSAP		St. Joseph Medicare-Plus	
		2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003
Medicare		$12	$14	$14	$16	$17	$20	$10	$12	$15	$22	$9	$9
Medicare	Medicare	$24	$29	$28	$33	$34	$39	$20	$24	$29	$44	$17	$17
Medicare	Non-Medicare	$35	$53	$41	$62	$45	$68	$31	$60	$34	$56	N/A	N/A
Non-Medicare		$23	$39	$27	$45	$29	$48	$21	$48	$20	$34	N/A	N/A
Non-Medicare	Medicare	$35	$53	$41	$62	$45	$68	$31	$60	$34	$56	N/A	N/A
Non-Medicare	Non-Medicare	$45	$78	$45	$91	$56	$96	$41	$96	$40	$67	N/A	N/A

Note: Formerly represented retirees (with the exception of formerly represented SPA retirees who retired after 12/31/01) did not have the Sandia Basic PPO, the Sandia Intermediate PPO, or the St. Joseph Medicare Plus Plan in 2002.

If you retire on or after **Jan. 1, 2003**, you will pay a percentage of the full premium based on your years of service at your retirement date. The following charts outline the monthly premium-share amounts (effective Jan. 1, 2003) for future retirees:

30 or more years of service (10% of full monthly premium)

Monthly Premium Rates

Retiree	Spouse/ Dependent	Sandia Basic PPO	Sandia Intermediate PPO	Sandia Top PPO	Lovelace Senior Plan/ CIGNA POS	Kaiser Permanente HMO/KSAP	St. Joseph Medicare-Plus
Medicare		$14	$16	$20	$12	$22	$9
Medicare	Medicare	$29	$33	$39	$24	$44	$17
Medicare	Non-Medicare	$58	$62	$68	$60	$56	N/A
Non-Medicare		$39	$45	$48	$48	$34	N/A
Non-Medicare	Medicare	$53	$62	$68	$60	$56	N/A
Non-Medicare	Non-Medicare	$78	$91	$96	$96	$67	N/A

25-29 years of service (15% of full monthly premium)

Monthly Premium Rates

Retiree	Spouse/ Dependent	Sandia Basic PPO	Sandia Intermediate PPO	Sandia Top PPO	Lovelace Senior Plan/ CIGNA POS	Kaiser Permanente HMO/KSAP	St. Joseph Medicare-Plus
Medicare		$21	$24	$30	$18	$33	$13
Medicare	Medicare	$43	$49	$59	$37	$67	$26
Medicare	Non-Medicare	$80	$92	$102	$90	$84	N/A
Non-Medicare		$58	$68	$72	$72	$51	N/A
Non-Medicare	Medicare	$80	$92	$102	$90	$84	N/A
Non-Medicare	Non-Medicare	$117	$136	$145	$144	$101	N/A

2003 Prescription Drug Plan changes

Top, Intermediate, and Basic PPO Prescription Drug plan participants will see a change in copay maximums for prescription drugs. Copay minimums will stay the same. Likewise, there is no change to the generic, preferred, and non-preferred coinsurance percentages (noted in the chart below). Only the 2003 prescription drug copay maximums will change:

Top and Intermediate PPO Prescription Drug Plan Changes	2002 Current MAX	2003 New MAX
Retail Pharmacies:		
Generic (20% of retail network price)	$8	$9
Preferred (30% of retail network price)	$21	$27
Non-preferred (40% of retail network price)	$34	$40
Mail Order:		
Generic (20% of retail network price)	$12	$12
Preferred (30% of retail network price)	$34	$36
Non-preferred (40% of retail network price)	$60	$68

Basic PPO Prescription Drug Plan Changes	2002 Current MAX	2003 New MAX
Retail Pharmacies:		
Generic (20% of retail network price)	$11	$13
Preferred (30% of retail network price)	$23	$30
Non-preferred (40% of retail network price)	$42	$60
Mail Order:		
Generic (20% of retail network price)	$12	$12
Preferred (30% of retail network price)	$34	$36
Non-preferred (40% of retail network price)	$60	$68

For more information:

- Refer to your Benefits Choices 2003 Open Enrollment booklets for complete plan details.
- Call the Benefits Customer Service Center at 505-845-2363 (the toll-free number is 1-800-417-2634, then dial 845-2363) with questions.
- Visit the Open Enrollment Website at www-irn.sandia.gov/hr/benefits/openenrollment/ for electronic copies of booklets, meeting schedules, plan changes, and FAQs.
- Write the Benefits web mailbox at benefits@sandia.gov with questions that will be answered in 24 hours.
- Attend a Benefits Choices 2003 Open Enrollment meeting for a live presentation and an opportunity to ask questions to presenters. (See schedule on following page.)

20-24 years of service (25% of full monthly premium)

Monthly Premium Rates

Retiree	Spouse/ Dependent	Sandia Basic PPO	Sandia Intermediate PPO	Sandia Top PPO	Lovelace Senior Plan/ CIGNA POS	Kaiser Permanente HMO/KSAP	St. Joseph Medicare-Plus
Medicare		$36	$41	$49	$31	$56	$13
Medicare	Medicare	$72	$82	$99	$61	$111	$26
Medicare	Non-Medicare	$133	$154	$170	$150	$140	N/A
Non-Medicare		$97	$113	$121	$120	$84	N/A
Non-Medicare	Medicare	$133	$154	$170	$150	$140	N/A
Non-Medicare	Non-Medicare	$194	$226	$241	$238	$169	N/A

15-19 years of service (35% of full monthly premium)

Monthly Premium Rates

Retiree	Spouse/ Dependent	Sandia Basic PPO	Sandia Intermediate PPO	Sandia Top PPO	Lovelace Senior Plan/ CIGNA POS	Kaiser Permanente HMO/KSAP	St. Joseph Medicare-Plus
Medicare		$50	$57	$69	$43	$78	$30
Medicare	Medicare	$100	$114	$138	$86	$155	$60
Medicare	Non-Medicare	$188	$215	$238	$210	$196	N/A
Non-Medicare		$136	$158	$169	$168	$118	N/A
Non-Medicare	Medicare	$186	$215	$238	$210	$196	N/A
Non-Medicare	Non-Medicare	$272	$317	$337	$335	$236	N/A

10-14 years of service (45% of full monthly premium)

Monthly Premium Rates

Retiree	Spouse/ Dependent	Sandia Basic PPO	Sandia Intermediate PPO	Sandia Top PPO	Lovelace Senior Plan/ CIGNA POS	Kaiser Permanente HMO/KSAP	St. Joseph Medicare-Plus
Medicare		$64	$73	$89	$55	$100	$38
Medicare	Medicare	$129	$147	$177	$110	$200	$77
Medicare	Non-Medicare	$239	$277	$306	$271	$252	N/A
Non-Medicare		$175	$203	$217	$216	$152	N/A
Non-Medicare	Medicare	$239	$277	$306	$271	$252	N/A
Non-Medicare	Non-Medicare	$350	$407	$434	$431	$303	N/A

Survivor coverage offered at new rate

For coverage effective Jan. 1, 2003, current survivors will pay 50% of the experience-rated premium. Experience-rated means that premiums will be based on specific group utilization. Based on the group usage model, survivors' rates will change as follows:

Survivor Rates

		Top PPO		CIGNA POS	
Survivor	Dependent	2002	2003	2002	2003
Medicare		168.00	98.50	100.00	61.18
Medicare	Medicare	336.00	197.00	200.00	122.35
Medicare	Non-Medicare	435.00	339.50	307.00	300.68
Non-Medicare		267.00	241.00	207.00	239.50
Non-Medicare	Medicare	435.00	339.50	307.00	300.68
Non-Medicare	Non-Medicare	528.00	482.00	407.00	478.50

Also new this year, non-enrolled eligible widows and widowers of deceased retirees can take advantage of a one-time opportunity to enroll for Sandia medical coverage at these (generally lower) premium rates. Eligible survivors can sign up during a special Open Enrollment period for them that begins Oct. 20 and ends Dec. 31, 2002.

For more information, contact Janey Carroll at 844-5065, Judy Lovato at 845-8327, or the Benefits Customer Service Center at 845-2363. Survivors can also use the toll-free number (1-800-417-2634, then dial 845-2363) to the BCSC for further information. Survivors will receive letters that explain the details of this new lower premium schedule.

Benefits meeting schedules

Benefits Choices 2003 meetings are a summary of health care, reimbursement spending account, voluntary group accident insurance, and vacation buy plan changes.

Employees/SPA-represented employees

Albuquerque meetings (Mountain time)

October 15, 2002 (Tuesday)			
Nonrepresented Employees	Benefits Choices 2003	Steve Schiff Auditorium	9 - 10 a.m.
Represented & Nonrepresented Employees	RSA	Steve Schiff Auditorium	10:10 - 11:10 a.m.
MTC & OPEIU Employees	Benefits Choices 2003	Steve Schiff Auditorium	11:15 a.m. - 12:15 p.m.
Students	Benefits Choices 2003	Steve Schiff Auditorium	1-2 p.m.
October 16, 2002 (Wednesday)			
Nonrepresented Employees	Benefits Choices 2003	CNSAC Auditorium	1 - 2 p.m.
Students	Benefits Choices 2003	CNSAC Auditorium	2:15 – 3:15 p.m.
October 22, 2002 (Tuesday)			
MTC & OPEIU Employees	Benefits Choices 2003	Steve Schiff Auditorium	9 – 10 a.m.
Represented & Nonrepresented Employees	RSA	Steve Schiff Auditorium	10:10 – 11:10 a.m.
Nonrepresented Employees	Benefits Choices 2003	Steve Schiff Auditorium	11:15 a.m - 12:15 p.m.
October 23, 2002 (Wednesday)			
Nonrepresented Employees	Benefits Choices 2003	Area IV Auditorium	9 - 10 a.m.
October 24, 2002 (Thursday)			
MTC & OPEIU Employees	Benefits Choices 2003	CNSAC Auditorium	1-2 p.m.
Nonrepresented Employees	Benefits Choices 2003	CNSAC Auditorium	3 – 4 p.m.

Albuquerque benefits fairs (Mountain time)

October 15, 2002 (Tuesday)	Steve Schiff Auditorium	8:30 a.m. – 2:30 p.m.
October 22, 2002 (Tuesday)	Steve Schiff Auditorium	8:30 a.m. – 1:30 p.m.
November 5, 2002 (Tuesday)	Wyndham Garden Hotel*	12 – 6 p.m.

* Wyndham Garden is at 6000 Pan American Fwy. NE

Carlsbad, Amarillo & Nevada meetings (all times local)

October 15, 2002 (Tuesday)	**Amarillo**		
Employees	Benefits Choices 2003	Trilab Video Conference Room, Building 1297 C at Pantex – Video Link	10:00 – 11:00 a.m.
Employees	RSA	Trilab Video Conference Room, Building 1297 C at Pantex – Video Link	11:10 a.m. – 12:10 p.m.
October 15, 2002 (Tuesday)	**Carlsbad**		
Employees	Benefits Choices 2003	Carlsbad Video Conference Room 201A – Video Link	9:00 – 10:00 a.m.
Employees	RSA	Carlsbad Video Conference Room 201A – Video Link	10:10 – 11:10 a.m.
October 23, 2002 (Wednesday)	**Nevada**		
Employees	Benefits Choices 2003	TBA	10:00 – 11:30 a.m.

2003 changes to benefits plans

Nonrepresented employees and SPA-represented employees

• Medical Plans — Premiums for Top, Intermediate, and CIGNA have increased.

• Prescription Drug Plan — Copay maximums have changed for Top, Intermediate, and Basic PPO Plans.

MTC/OPEIU-represented Employees

• Medical Plans — Intermediate and Basic PPO Plans are being offered for the first time to MTC- and OPEIU-represented employees.

• Medical Plans — Top PPO plan design has changed.

• Prescription Drug Plan: Prescription drugs for all PPO Plans have gone to a co-insurance with minimum and maximum copays.

• Vacation Buy — The plan is being offered for the first time to MTC- and OPEIU-represented employees.

• RSA — Health Care maximum election amount increases to $4,000 for MTC- and OPEIU-represented employees.

Note for MTC- and OPEIU-represented Employees: Effective Jan. 1, 2003, your

• vision care plan has changed to allow lenses every 12 months.

• your dental plan eligibility for dependents age 19 through 23 has changed and no longer requires full-time student status.

• your dental plan reimbursement schedule for Type B expenses has been enhanced.

These changes may affect how you allocate a dollar amount for your Health Care Reimbursement Spending Account during Open Enrollment, but you do not need to take any action on your Vision Care Plan or Dental Plan during Open Enrollment

Retirees

• Medical Plans — Medical Plans will be coordinated differently with Medicare. Non-Medicare premiums are based on non-Medicare retiree and survivor "experience" (group usage).

• Medical Plans — The Lovelace Senior Plan design has changed.

• Medical Plan Premium-Sharing — If you retire on or after 1/1/03, you will pay a percentage of the full premium based on your years of service at your retirement date.

Survivors

• Medical Plans — Eligible widows and widowers of deceased retirees will pay for Sandia medical coverage at 50% of the retiree premium rates.

• Medical Plans — Medical Plans will be coordinated differently with Medicare.

• Medical Plans — Unenrolled survivors will be offered the above coverage.

• Medical Plans — The Lovelace Senior Plan design has changed.

Open Enrollment website

Employees: www-irn.sandia.gov/hr/benefits/openenrollment/
Retirees: www.slfcu.org/thunderbird/

Livermore meetings & benefits fairs (Pacific time)

October 29, 2002 (Tuesday)			
Employees	Benefits Choices 2003	B. 904 Auditorium	1:30 – 3:00 p.m.
Employees	RSA	B. 904 Auditorium	3:00 – 4:00 p.m.
October 30, 2002 (Wednesday)			
Employees	Benefits Choices 2003	B. 904 Auditorium	9:00 – 10:30 a.m.
Employees	RSA	B. 904 Auditorium	10:30 – 11:30 a.m.
Retirees Medicare Primary	Benefits Choices 2003	Doubletree Hotel * (formerly Holiday Inn)	1:00 – 2:30 p.m.
Retirees Non-Medicare	Benefits Choices 2003	Doubletree Hotel * (formerly Holiday Inn)	2:30 – 3:30 p.m.

* Doubletree Hotel is at 720 Las Flores, Livermore, Calif.

Washington meetings

Videotapes will be provided for viewing by all Washington-based employees.

Retirees

October 28, 2002 (Monday)			
Medicare Primary	Benefits Choices 2003	Wyndham Garden Hotel *	8:30 – 10 am.
Medicare Primary	Benefits Choices 2003	Wyndham Garden Hotel	10:30 a.m. – 12 noon
Non-Medicare	Benefits Choices 2003	Wyndham Garden Hotel	1:30 – 2:30 p.m.
Medicare Primary	Benefits Choices 2003	Wyndham Garden Hotel	3:00 – 4:30 pm.
October 29, 2002 (Tuesday)			
Medicare Primary	Benefits Choices 2003	Wyndham Garden Hotel	8:30 – 10 a.m.
Medicare Primary	Benefits Choices 2003	Wyndham Garden Hotel	10:30 – 12:00
Non-Medicare **(Formerly Represented)**	Benefits Choices 2003	Wyndham Garden Hotel	1:30 – 2:30 p.m.
Medicare Primary **(Formerly Represented)**	Benefits Choices 2003	Wyndham Garden Hotel	3 – 4:30 p.m.
November 4, 2002 (Monday)			
Non-Medicare	Benefits Choices 2003	Wyndham Garden Hotel	8:30 – 9:30 a.m.
Medicare Primary	Benefits Choices 2003	Wyndham Garden Hotel	10 – 11:30 a.m.
Medicare Primary	Benefits Choices 2003	Wyndham Garden Hotel	1:00 – 2:30 p.m.
Medicare Primary	Benefits Choices 2003	Wyndham Garden Hotel	3:00 – 4:30 p.m.
November 5, 2002 (Tuesday)			
Medicare Primary	Benefits Choices 2003	Wyndham Garden Hotel	8 – 9:30 a.m.
Medicare Primary **(Formerly Represented)**	Benefits Choices 2003	Wyndham Garden Hotel	10 – 11:30 a.m.

* Wyndham Garden is at 6000 Pan American Fwy. NE

Lovelace Senior Plan changes for N.M. retirees

The following copay changes will occur to the Lovelace Senior Plan beginning Jan. 1, 2003:

- $100 copay per inpatient hospital admission
- $100 copay per inpatient mental health/substance abuse admission
- $15 copay per primary care physician office visit or routine physical
- $15 copay per out-of-network physician office visit for emergencies or urgent care only
- Generic prescriptions — $10 copay at retail and $20 copay at mail order
- Brand name prescriptions — $20 copay at retail and $40 copay at mail order
- $30 copay for routine hearing and vision exam (every 2 years)

Watch for your Benefits Choices 2003 Open Enrollment booklets for complete details on these plan changes or call the Benefits Customer Service Center at 505-845-2363.

New coordination of benefits between Mutual of Omaha and medicare for medicare-primary retirees

For Medicare-primary retirees, there will be a change in the way Sandia's PPO plans coordinate with Medicare. Booklets to formerly nonrepresented Medicare-primary retirees who are in the Top, Intermediate, and Basic PPO Plans will be sent detailed booklets explaining this change the first week of October. Extra copies of these booklets are available in the Benefits Department Customer Service Center; call the BCSC at 505-845-2363 for more information.

Actions required for Open Enrollment participants

Employees – If you wish to enroll in or change one of the following benefit plans, you will need to do so at Open Enrollment:

• Medical Insurance: You can enroll, change medical coverage, change deductions to pre- or post-tax, add or drop dependents, or waive coverage.

• Reimbursement Spending Account: You can allocate a specific dollar amount to an account for unreimbursed health or day care (for eligible dependents) expenses on a pre-tax basis.

• Voluntary Group Accident: You may change your coverage amounts and plans.

• Vacation Buy: You can participate in a plan that allows purchase of vacation on a pre-tax basis.

Retirees & Eligible Year-Round Students – If you wish to enroll in or change one of the following benefit plans, you need to do so at Open Enrollment:

• Medical Insurance: You can enroll, change medical coverage, add or drop dependents, or waive coverage.

Changes to Sandia's 401(k) Fidelity Plan

Changes to Fund Options in Sandia's 401(k) Plans

The Sandia Savings Plans fund list is changing and will soon include a total of 18 funds. The DFA US Small Cap Portfolio and the Frank Russell Trust Company Small Cap Fund were added August 31 as new options, and the Credit Suisse Emerging Growth Fund ("CSEG Fund," formerly the Warburg Pincus Emerging Growth Fund) will be removed from the list.

The new funds:

DFA US Small Cap Portfolio — This fund is a passively managed fund (that is, buys and holds a diversified portfolio without attempting to identify mis-priced stocks) managed by Dimensional Fund Advisors (DFA) based in Santa Monica, Calif. While the fund is passively managed, it is not an "index" fund, since it is not meant to replicate any particular index. The fund is designed to own the securities of companies listed on the major US stock exchanges and that encompass the smallest 10% of the US stock market. The fund manager seeks excess returns over a benchmark by providing consistent exposure to the US small cap market, including value- and growth-oriented companies.

Frank Russell Trust Company Small Cap Fund — This fund is an actively managed fund (that is, portfolio managers attempt to identify mis-priced stocks) managed by Frank Russell Trust Company (Russell) based in Tacoma, Wash. The fund uses a manager-of-managers approach, which means that Russell selects a group of small cap managers that, combined, make up the fund. Managers selected by Russell incorporate growth, value, and market-oriented styles of investing. Each manager is chosen based on its potential to have higher returns than a comparative benchmark index. The combination of the managers in the fund creates a complete portfolio that holds stocks in all areas of the US small cap market.

Fund removed:

Credit Suisse Emerging Growth Fund — The CSEG Fund is being removed for several reasons:

• Changes in the structure, organization, and management at the firm;

• The fund invests primarily in growth-oriented companies, resulting in a lack of small cap value-oriented investing opportunities for participants; and

• Disappointing long-term performance relative to a comparative benchmark (the Russell MidcapTM Growth Index).

As of Aug. 1, 2002, participants were no longer be able to make new contributions to or exchanges into the Credit Suisse Emerging Growth Fund. However, participants may leave existing balances in the fund for as long as one year – until July 31, 2003.

If you are currently making contributions to the Credit Suisse Emerging Growth Fund, you will need to change your contribution election by July 31, 2003.

If you do not request a change to your contribution election by July 31, 2003 your contributions that had been directed into the Credit Suisse Emerging Growth fund will be redirected into the Interest Income Fund. Participants have one year to exchange any remaining balances from this fund into another investment option within the Plan. If the remaining balances are not exchanged by that time the monies will be automatically exchanged for you into the Interest Income Fund.

For more information, go to the following web address: http://www-irn.sandia.gov/HR/Policies/Benefits/Retirement/savingsnews/

Accepting Other Funds

You can now rollover both pre-tax and after-tax contributions from another 401(k), 403(b) plan, governmental 457(b) retirement plan, as well as IRAs, into the Sandia Savings Plan. The rollover provision has been modified to include pretax, and after-tax contributions from other employer-sponsored retirement plans. Most taxable amounts from non-conduit IRA's now may also be rolled over into this Plan.

When: effective 7/24/02

How: Request a check from the current holder of the account, made out to FIIOC (Fidelity Investments), FBO (your name and social security number). Send the check to MS 1021, then complete a Rollover Contribution Form. Contact Rebecca Spires at 844-9965, David Medina at 844-0997, or Courtney Thompson at 284-5830. More information is available: at the Fidelity website, hit the NetBenefits button and go to "Plan News" in the upper right corner.

Union Members: This is available for all union members.

Increased Contribution Limit

You can now save up to 17% of your earnings in the savings plans. The IRS limits still apply, meaning you can't contribute more than $11,000 pretax or $40,000 (pretax; after-tax and employer match added together).

When: The new policy became effective 7/25/02 (Payroll - 8/01/02)

How: To make this change, contact Fidelity by calling 1-800-240-4015, or by going to the website click on NetBenefits, login, under "Account Management" (left side of the screen) click "Deductions," under "Contribution Amount," click the "Change" button, enter the percentage, click "Update Payroll Deduction." More information will be available soon, on NetBenefits in the "Plan News" in the upper right corner.

For union members: SPA — this is now available to you.

OPEIU and MTC — now in negotiation

Catch-up Contribution

Are you age 50+ and contributing at the maximum amount? If so, you can now elect to have up to an additional $1,000, contributed on a pretax basis to your savings plan account, without any IRS restrictions. This contribution may be made with regular payroll deduction.

When: 9/03/02 (for Payroll - 9/12/02)

If you are a Union member: SPA — this provision does apply to you.

OPEIU and MTC — In negotiation

How: More information will be available soon, at the Fidelity website, hit the NetBenefits button and go to "Plan News" in the upper right corner. Update: To elect this contribution option, go to NetBenefits at www.401k.com and follow these steps: Login, select the "Accounts" tab at the top of the page, select "Deductions" in the left column of options. If you are age 50, or will be by 12/31/2002, the Catch-up Contribution option will appear on your screen.

Electronic funds transfer

Are you considering a loan or a withdrawal from the Sandia Savings Plans? If so, don't wait for the check to come in the mail, but rather have it transferred directly into your bank account, through the Electronic Funds Transfer (EFT) Service, now available at NetBenefits.

When: Available 10/1/02

How: For more information log on to NetBenefits at and select "Loan or Withdrawal." Coming soon on NetBenefits, see "Plan New" in the upper right corner.

Union Members: This is available to all union members.

Now is the time to buy vacation for next year — it's pre-tax, too

Once a year during Open Enrollment, employees have the option to buy vacation. The Vacation Buy Plan (VBP) is an optional plan that allows employees to purchase vacation on a pre-tax (before federal, state, and social security taxes are deducted) basis. Why would you want to purchase vacation as opposed to taking time off without pay? The vacation hours you purchase are deducted evenly from 25 biweekly paychecks of the calendar year rather than having a financial impact all at once.

Employees may purchase a minimum of 8 hours up to a maximum of 44 hours of vacation. The cost of each vacation hour is determined by dividing full-time annual base pay as of the beginning of the calendar year by 2,080 (or if weekly rated, divide by your weekly rate; if hourly rated, divide by your hourly rate).

Purchased vacation can be used once carryover, accrued/posted, and convertible vacation have all been depleted. Unused elected vacation hours will be sold back in the last paycheck in December at the same rate as purchased. Upon termination or retirement, elected vacation hours not used but paid for will be sold back at the same rate as purchased.

For full details, visit the new Vacation Buy Plan Summary Plan Description at the Open Enrollment website.

Tax savings is easy with Reimbursement Spending Accounts

During Open Enrollment, all regular Sandia employees, limited-term employees, postdoctoral appointees, and year-round faculty sabbatical employees are eligible to enroll in the Health Care RSA (HCRSA) and/or the Day Care RSA (DCRSA). Each account allows you to reduce your reportable income by as little as $100 to as much as $4,000 for health care and $5,000 for day care—creating savings on your FICA taxes and federal income taxes. The money you elect to set aside may be used to pay for eligible out-of-pocket health care expenses with the HCRSA. The DCRSA can be used to pay for day care for your eligible dependents. To learn more about RSA, read the next issue of the *Lab News* (Oct. 18) or attend a Sandia Benefits Choices meeting on Oct. 15 or Oct. 22 in New Mexico or Oct. 29 or Oct. 30 in California. Sandia's RSA Summary Plan Description can be found at http://www-irn.sandia.gov/hr/policies/benefits/health/rsa/rsaletter.htm.

Feedback

9/80 is nothing but a headache for this 40-hr-workweek employee

Q: *As a member of a line organization working with external customers, I need to work a straight 40-hour week to meet my customers' expectations. However, I have difficulty performing any work that requires support from laboratory infrastructure. Attempts to contact purchasing, staffing, shipping/receiving, and facilities on Fridays during the last four months have met with frustration. Most often, the person I am required to contact is out. Sometimes they have no one assigned to cover for them, sometimes the work cannot be done by anyone else, and frequently the person to whom I am referred by voicemail is also out. Twice, the voicemail chain has met itself — with one person referring customers to another whose voice mail refers to a third whose voice mail refers back to one of the previous customer service representatives. This is not good customer service. My perception may be harsher than the reality, but it seems like I work to support my customers five days a week while Laboratory Support Staff support their customers four days a week.*

A: First, the Integrated Enabling Services (IES) Leadership Team is committed to providing service Monday through Friday from 8 a.m. to 4 p.m. Many services are available earlier and later. It's very disappointing to hear that we are not consistently meeting this commitment. We've taken the opportunity provided by your feedback to reconfirm our commitment to our respective organizations. Let us know if you find specific services where our commitment is not being met. First, notify the appropriate manager of the service issue. If that does not result in an appropriate response, contact the Director, the Vice President, or use the "I tried to get service, couldn't" button on the IES Home Page.

To assist you in quickly finding, initiating, and start using services, we provide help desk, hotline, and other yellow page service listings. We're working right now to ensure that you can find an appropriate and valid phone number and that the phones are answered by a person who will help you. We'll be communicating to the Labs as a whole this fall about our commitments and progress in this area.

— Don Blanton (3000), Pat Smith (8500), Pace VanDevender (9400), Lynn Jones (7000), Frank Figueroa (10000), Bob Kestenbaum (11000), and Les Shephard (12100)

BRAT may assess risks of terrorism, natural disasters to dairies, feedlots, ranches, food packaging

New tool is based on Sandia-developed RAMPART™ technology

By Chris Burroughs

BRAT, a new tool based on the Sandia software RAMPART™–GSA, may soon be applied to dairies, feedlots, ranches, and food packaging. RAMPART™–GSA assesses the risks of terrorism, natural disasters, and crime to government buildings managed by the US General Services Administration.

"We are using the RAMPART™ [for Risk Assessment Method] technology to work on food production and processing entities, starting with dairies," says Regina Hunter (6804), project lead. "At this point BRAT [for Biosecurity Risk Assessment Tool] is a collection of screens that ask questions about dairy location, numbers of buildings, how many cows there are, types of shelters for cows — things that could affect dairy farms."

The goal is to turn BRAT into something like RAMPART™–GSA. After filling out the screens, a set of equations run on a computer would determine the risk for an event at a particular dairy. It will ultimately include information about animal diseases, provide names of state veterinarians, and contain information such as regulations for shipping cattle between states. BRAT is one activity of Sandia's Agriculture Security and Food Safety Pre-Initiative.

Abram Van Der Geest, a student intern who developed BRAT under Regina's supervision, says BRAT is designed for use by farmers, who could, for example, download the software from an agricultural extension agency office and run it either at the agency or at the farm. BRAT would provide the farmers the information they need to determine risks to their facilities, giving them a starting point about what changes they needed to make in order to reduce risk factors.

TWO CALVES — Calves are housed and cared for individually because of their high value and susceptibility to disease and injury. (Photo courtesy of Gonzalez Dairy)

Over the summer Abram, Regina, and another intern, Brent Melville (6804), spent some time with Joe Gonzalez, owner of the Gonzalez Dairy in Mesquite, N.M., to obtain information about how dairies operate and potential threats to dairy farms. The project was done under the auspices of Sandia's Small Business Assistance Program.

Dairy farming is a major industry in New Mexico — in 1999 cash receipts reached more than $687 million. Milk and other dairy products are the second largest income generator for New Mexico farmers and ranchers. Dairy cattle numbers exceeded 236,000 at the beginning of 2000, up from 218,000 in 1999. As a state, New Mexico ranks 10th in the US in overall milk production.

"Obviously with dairy farming such a major industry in New Mexico, keeping dairies safe is a top priority, and BRAT could play a major role in that," Abram says.

Ultimately BRAT would be applied to other areas of the food industry, including feedlots, ranches, and food packaging.

Regina says that once BRAT is operational, it will have a direct impact on RAMPART™ technology. For example, BRAT should be able to do real-time updating, like gaining information on diseases that are moving through the country. RAMPART can't do this now.

"Having that real-time updating would be a real boon to RAMPART™-based tools," Regina says.

BRAT could be fully operational in about two years — if funding becomes available, Regina says.

'Unprecedented' aircraft safety study brings FAA commendations to three Sandians

Report to help make airplane certification, maintenance, and operations processes better

By John German

A report that airline industry critics and government officials have praised as unusually critical of its sponsoring agency, the Federal Aviation Administration, has earned three Sandians personal commendations from FAA chief Jane Garvey.

Mark Ekman (6252), one of the Sandia team members, says the report, released in March, takes a constructive look at aircraft certification, maintenance, and operations processes and procedures that govern US commercial aviation safety.

The three Sandians involved — Mark, Tonimarie Dudley, and Paul Werner (all 6252) — were presented framed letters of commendation from Garvey Aug. 21 in 6000 VP Bob Eagan's office.

The hand-signed letters state, in part, "You should be very proud that your work will help to continuously improve upon the high level of safety now achieved by commercial aviation in the United States."

The report's acknowledgements section also commends the Sandians' "expert support and tireless patience."

Jumble of processes

The report, called the "Commercial Airplane Certification Process Study" (CPS), was commissioned by the FAA in January 2001 to take a critical look at the interrelated jumble of US commercial aircraft certification, maintenance, and operations processes and procedures, some "owned" by the FAA, others by private companies.

Its goal was to highlight areas where process improvements could lead to widespread increases in aircraft safety. It complements the FAA's Safer Skies Initiative, which seeks to reduce US commercial fatal accidents by 80 percent by 2007.

Mark, Tonimarie, and Paul were among 42 experts who formed the blue-ribbon panel that produced the report. The panel included FAA regulators, airplane manufacturers, pilots, retired industry executives, and NASA and DoD representatives.

But the Sandians' involvement was more integral to the report's conclusions than their numbers suggest.

"This is probably the most positive thing I've seen in the last 20 years. There were no limits, no sacred cows."

The three, all formerly of Sandia's Surety Assessment Center 12300, brought a risk management and systems surety focus to the project derived from the Labs' nuclear weapons work. That approach was necessary to make sense of both the low probability/high consequence nature of aircraft accidents and the interrelatedness of aircraft safety issues, says Mark.

This systems approach forms a common theme around which all 15 of the report's findings and two observations grew.

Finding #7, for example, reads: "There is no widely accepted process for analyzing service data or events to identify potential accident precursors."

The report focuses on five categories of processes: safety assurance; data management; maintenance, operations, and certification interfaces; major repairs and modifications; and oversight.

No sacred cows

It concludes that the findings and observations are interrelated and calls for a systems solutions and a cultural change among industry and government players.

It also concludes that many of the accidents reviewed during the study followed one or more previous incidents, or precursors, that were not acted on because those involved were unaware of the significance of what they had observed. Often the reason for this lack of awareness was failure to view the significance of the event at an airplane level rather than at the system or subsystem level.

Industry watchdogs and insiders praised the report, which they called "sharply worded," "hard-hitting," and "unprecedented in government."

"This is probably the most positive thing I've seen in the last 20 years," said National Transportation Safety Board member and FAA critic John Goglia in a March 21 *Washington Post* article. "There were no limits, no sacred cows," he said.

Mark, Tonimarie, and Paul will continue to work with the FAA in a follow-on project to the CPS to analyze past accidents and incidents, identify lessons learned, create a lessons-learned database, and develop a lessons-learned training program for the aviation industry, says Mark.

Sandia double-blind evaluation of MOLE detector device shows results 'no better than random'

By Ken Frazier

The MOLE programmable detection system, a device advertised for an ability to detect a variety of substances, including explosives, has been tested in double-blind experiments by Sandia and found to perform no better than random chance.

DALE MURRAY

The tests were undertaken at the request of the Rocky Mountain office of the National Law Enforcement and Corrections Technology Center (NLECTC) in Denver. Sandia is the technology partner for the center, which is a program funded by the National Institute of Justice, the research arm of the US Department of Justice.

The MOLE programmable detection system, made by Global Technical Ltd. of Kent, UK, has a search handle with a radio-type antenna that can freely pivot. The product is advertised to operate using static electricity only and requiring no batteries or other power sources. The antenna can be balanced to protrude in front of the operator but is free to swing to either side with a slight tilt of the operator's hand. A positive indication is said to occur when the antenna pivots across the operator's body and points toward the target material.

Double-blind test called for

Prior to operation a specific programming card designating the substance to be searched for is inserted into a cardholder clipped to the operator's belt.

MOLE device handle, showing its antenna and permanently attached "programming chip."

MOLE was brought to the attention of NLECTC, and subsequently an offer to demonstrate the product was made. The NLECTC contacted Sandia for assistance in conducting a field test of MOLE.

Dale Murray of Sandia's Entry Control and Contraband Detection Dept. 5848 was assigned to help design and conduct the field test.

Because the MOLE's detection capability is subject to human interaction and interpretation, Sandia suggested that the test should be "double blind." This is a typical test approach used when the outcome of trials is dependent on human influences or interpretation.

The field test was conducted earlier this year at NLECTC's office in Denver.

The test plan was designed to be simple to implement but scientifically and statistically rigorous.

Four cardboard boxes were labeled to represent "heads" and "tails" of a coin toss (Box 1 labeled HH for heads-heads, Box 2 HT for heads-tails, etc.) This way, the box in which to place the target substance could be determined in a random fashion with two coin tosses. All this ensured that the location for each trial would be truly random.

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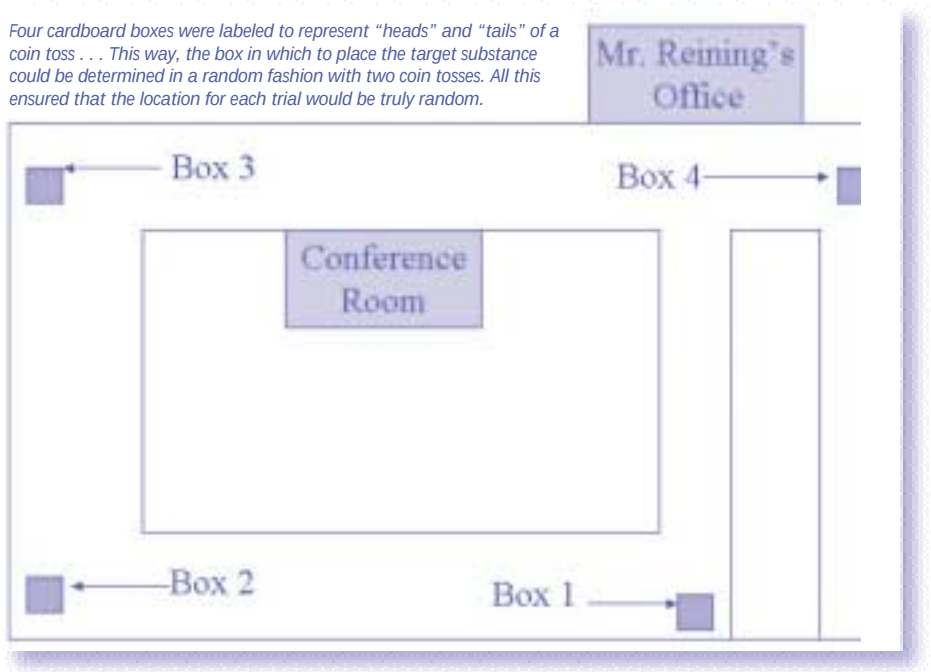

FLOOR PLAN of the double-blind field test carried out by Sandia.

As with any double-blind test, those administering the test were separated from those being tested so that the testers could not subconsciously provide nonverbal cues to indicate where the target material is located.

The four boxes were placed in the four corners of a hall extending around the perimeter of the building's second floor. This allowed sufficient separation of the boxes for unique identification and ample angular access to each (90 degrees) for triangulation of positions, if necessary.

For the demonstrations and tests approximately 20 grams of C4 explosive were placed in a plastic bag, which was tied shut and placed inside a plastic 35 mm film canister. Then the lid was placed on the canister. A sales representative, Robert Balais, showed how MOLE worked, first searching for a shotgun shell and a small-caliber bullet. He stood stationary and the antenna moved, pointing to the ammunition, in plain view of everyone. He did the same thing with the explosive material when it was in plain view on the conference room table. He stated that he had been better than 95 percent accurate in locating and identifying substances with MOLE.

He agreed to the planned test conditions — having the explosive material placed in one of the four cardboard boxes at the corners of the hall.

First a baseline test was conducted, to make sure the test parameters were agreeable to all. The target was placed in a box, selected by dice throw, in full view of every participant. Five baseline trails were conducted, and each time Balais used the MOLE to point to the (known) box, even though he said he didn't need such prior knowledge. Such baseline trials are considered essential to make sure any test problems are identified and corrected before the formal testing.

Parties agree test parameters fair

With the baseline trial complete, he stated that the test parameters were acceptable and fair and said he had no trouble locating the targets.

The participants then divided into two groups and proceeded to the double-blind phase of the testing. The search group was not privy to the coin toss and placement of the target, and the placement group was not present for the actual search.

Twenty separate double-blind trials were conducted.

Following the tests, the participants reconvened to score the results.

Since the target was in one of four locations, by random selection alone it is expected that of the 20 trials, approximately 5 selections would be the correct location. Dale says the probabilities, based on random chance, are that the three most likely results would be 5, 4, and 6 correct selections. Summing probabilities shows that randomly selecting correct boxes between 3 and 7 times during a 20-trial test would be expected to occur 81 percent of the time, Dale says.

However, if the product worked as advertised, he says, the number of correctly identified boxes would be statistically more significant, at least 12 to 13 correct "hits," or a little better than half.

In fact, the test results showed that correct boxes had been selected only 6 times, consistent with random chance.

"Based on statistical analysis of the double-blind test results, the MOLE performs no better than a random selection process," concludes Dale in the Sandia report he authored, "Double-Blind Field Evaluation of the MOLE Programmable Detection System." The full report is on an NLECTC web page at: www.nlectc.org/virlib/TopicList.asp?intTopicID=34.

MOLE programmable cardholder, card for explosives, and search handle.

In follow-up discussions Balais expressed puzzlement at the low performance of MOLE in the tests. He suggested that perhaps the four cardboard box containers had somehow all become contaminated with explosive powder. This seemed unlikely, but the boxes were all wrapped in clear plastic and sent to Sandia for analysis with an ion mobility spectroscopy explosives detector capable of detecting less than a single fingerprint of explosive material. The results for all surfaces were negative. This, says the Sandia report, rules out any possibility that contamination occurred during the test.

The Sandia report notes that MOLE appears "physically nearly identical" to a product Sandia examined in October 1995 called the Quadro Tracker, then marketed by a South Carolina company. The visible physical differences between the two products appear to be the product labels and the handle-programming chip — interchangeable on the Quadro Tracker, permanently fixed on the MOLE. Additional information on the Quadro Tracker can be located by performing a search on the World Wide Web using the key words Quadro and Tracker.

Congratulations

To Mee and Chad (3128) Hjorth, a son, Trevor Hjorth, Aug. 29.

Take Note

Retiring and not seen in *Lab News* pictures: **James Asay** (1610), 31 years; **John Gabaldon** (6211), 32 years; **Reynaldo Griego** (10263), 28 years; **Robert Helgesen** (6134), 25 years; **Clara Jackson** (6118), 10 years; and **William Packer** (14010), 28 years.

Sandia's Julia Phillips wins first-ever Horizon Award

Honor is for her efforts in encouraging girls and women to pursue science and engineering as career

By Chris Burroughs

Julia Phillips, Director of Physical & Chemical Sciences Center 1100, looks to the horizon every day — for herself as one of a handful of women technical center directors at Sandia, for other women pursuing careers in science, and for girls discovering the excitement of science for the first time.

For her efforts in encouraging girls and women to pursue science or engineering as a career, Julia has been awarded the US Department of Labor Women's Bureau's Horizon Award at a New Mexico Commission on the Status of Women Estrella Award ceremony. This is the inaugural year for the Horizon Award, and New Mexico is serving as the pilot. The recipient of this award must be a New Mexico resident who has contributed significantly to the acceptance and advancement of women in science, engineering, math, or technology.

Julia's efforts in helping women and girls develop an interest in science and engineering as a career over the past 20 years are undeniable. Like VP 1000 Al Romig, who nominated her, says, "Julia's résumé shows she is the consummate role model for girls and women aspiring in science and engineering."

But there's more than a résumé, there's a personal commitment that stems from a childhood realization that science is for girls too.

Growing up in Freeport, Ill. — a small town with a population of 25,000 and surrounded by cornfields — Julia remembers kneeling in the hall with the rest of her fifth grade class doing triangulation to measure distances and being told this was the way to measure the distance to the stars. She was awestruck.

Her mother was always ordering science kits that she and her brother played with and used to expand their knowledge in science. Her senior year, it was not an option to quit math, like some of the other girls. By the time she graduated from high school she knew she was going to study science in college.

She pursued an undergraduate degree in physics from the College of William and Mary and a PhD in applied physics from Yale.

After Yale, she took a job as a research scientist at AT&T Bell Laboratories where she worked with thin films and found herself — not to anyone's surprise — being active in programs that encouraged young people, particularly women, to develop an interest in science.

One of the early programs was a series called "World of Science" where prominent Bell scientists would give down-to-earth lectures to high school students about different aspects of their work. The Saturday morning lectures were attended by 400 to 500 kids at a time.

She's always mentored young women, and particularly enjoys mentoring undergraduates.

"These are the ones you have the most influence over," Julia says. "You get them in your labs, find out their priorities, and give them information that enables them to make choices that fit."

Now as a leader at Sandia, she finds different ways to encourage women in science. One way, she says, is to be flexible and allow women with children to work part-time.

"For those women who are good at what they do, working part-time works out fine," Julia says. "When they are here, we have their full attention. You need to realize that a person's effectiveness isn't gauged only by the number of hours they are here."

Julia is working to increase the number of PhD women scientists in her center. Out of 70 technical staff, she currently has three PhD women scientists, which she is hoping to raise to four by the end of October. She is proud of her center, saying that it does some of the most forward-looking research at Sandia. It's a "science organization in an engineering lab," she says.

Finding balance between work and personal life is one of the keys to a successful career. Julia says she has pretty much found that balance, though sometimes it gets pretty hectic. Julia is married to a neurobiologist at the University of New Mexico and is the mother of two girls, one in the fourth grade and another in the sixth.

"I do work, and I do family," Julia says. "My husband helps a lot. When he travels, which is rarely, I block out my time for the kids."

She also teaches science at her children's school four hours a week, which fits in with her life and interest.

And how do you get girls interested in science — something she is doing with her own children?

"You start young. Encourage children to ask questions and wonder. Treat science and math as a part of life, not something to be put in a separate box. Here in New Mexico you can go out and look at the stars that are so bright. But also, let the girls and young women have role models and see that they can have balance between work and the rest of their life."

JULIA PHILLIPS is the recipient of the first US Department of Labor Women's Bureau's Horizon Award for contributing significantly to the acceptance and advancement of women in science and engineering. (Photo by Randy Montoya)

How to get girls interested in science:

"You start young. Encourage children to ask questions and wonder. Treat science and math as a part of life, not something to be put in a separate box. Here in New Mexico you can go out and look at the stars that are so bright. But also, let the girls and young women have role models and see that they can have balance between work and the rest of their life."

Third Weapon Intern Program class graduates in special ceremony

GRADUATION DAY — Fifteen students who participated in the Sandia-sponsored Weapon Intern Program graduated Sept. 25 in ceremonies at the Steve Schiff Auditorium. The students are the third class to graduate in the two-year program that trains the next generation of nuclear weapons experts. Graduates of the Class of 2002 are Stanley Atcitty (2522), Merlin Decker (2131), Eden Tadios Eager (2951), Kimberly Haulenbeek (15415), Maj. Scott Jacobs (USAF), Nazir Khalil (DOE/Albuquerque), Loretta (Lori) Maestas (2132), Maj. Joseph Oder (USAF), Robert Repine (Honeywell, Kansas City Plant), Arthur Shanks (2113), Daniel Sherman (2112), John Sichler (2131), Maj. Antonio Sukla (US Air Force), Donald Susan (1822), and Maria Walsh (12326). Special speakers during the ceremonies were: Brig. Gen. Robert Smolen, Director of Nuclear and Counter Proliferation, Air Force/XON; Brig. Gen. Ronald Haeckel, Principal Deputy Assistant Administrator for Military Application, NNSA; Karen Boardman, Deputy Manager for Programs and Technical Services, NNSA; and Joan Woodard, Executive VP and Deputy Director, Sandia. Introducing the speakers was John Stichman, VP Weapons Systems Division 2000. In the picture to the left, from the left, senior mentors Tom Schultheis and Bob Benjamin talk with guest speaker Gen. Haeckel and Joan Woodard, Sandia Executive VP.

(Photo by Bill Doty)

Mileposts

New Mexico photos by Iris Aboytes
California photos by Bud Pelletier


Arthur Andazola
40 2522


Charles Trauth
40 12301


William Chambers
35 5852


Ronald Halbgewachs
35 6501


Robert Nasby
35 1748


Raymond Hibray
30 1742


Steven Shope
30 15335


John Smugeresky
30 8724


Marcelino Armendariz
25 1751


Larry Azevedo
25 2541


Charles Dusing
25 10843


Ralph French
25 8910


Rodney May
25 9126


Marvin Nicholson
25 10842


Michael Vahle
25 9900


Francis Bouchier
20 5848


Gilbert Maestas
20 10267


Thomas Merewether
20 14406

Recent Retirees


David Shirey
40 15252


Max McCoy
31 14181

Management promotions: June

New Mexico

Jake Deuel from PMTS to Manager of Vehicle Systems Dept. 5851.

Jake joined Sandia in 1987 and spent two years in the CAD Technologies Department while working on a master's degree through the Graduate Engineering Student Intern (GESI) program. His last 13 years have been in the transportation safeguards program ensuring the safe and secure transportation of nuclear weapons and special nuclear material through vehicle design, development, testing, production support, field support, reapplication, and retirement. He has a BS and an MS in mechanical engineering from the University of New Mexico.


JAKE DEUEL

* * *

Tim Gardner, from PMTS in Materials Chemistry Dept. 1846 to Manager, Ceramics and Glass Processing Dept. 14192.

Tim has worked in research and development of ceramic materials and heterogeneous catalysts since joining Sandia in 1983. His new duties involve managing ceramics and glass process development activities, with a significant effort devoted to active ceramics production in support of the neutron generator production mission.


TIM GARDNER

He has a BS in ceramic engineering from Alfred University, an MS in ceramic science from Pennsylvania State University, and a PhD in chemical engineering from the University of New Mexico, which he earned through Sandia's Educational Assistance and University Part Time Programs.

* * *

Andrew Orrell, from Manager to Level II Manager in OCRWM Management Dept. 6850.

Andrew has been involved in nuclear waste management programs since joining Sandia in 1990, first with the Waste Isolation Pilot Plant (WIPP), where he supported the experimental and field test programs. Later he joined the National Transuranic Program, where he was promoted to manager, overseeing the development of national-scale waste transportation and waste management strategies supporting the opening of WIPP. Since 1997, he has managed Sandia's technical effort for the post-closure analyses for the Yucca Mountain Project site recommendation. He has a BS in geology from the University of Maryland and an MS in geology from the University of Massachusetts.


ANDREW ORRELL

* * *

Rush Robinett, from Manager, Intelligent Systems Controls Dept. 15211, to Deputy Director, Energy and Transportation Security Center 6200.

Rush came to Sandia's Threat and Countermeasures Development and Evaluation Department in 1988 to design and test ballistic missile defense countermeasures (AKA Star Wars). He was named DMTS in 1995 and in 1996 was promoted to Manager of Intelligent Systems Sensors and Controls Department to develop collective robot teams. Rush's degrees are all in aerospace engineering — a BS from Texas A&M University, an MS from the University of Texas at Austin, and a PhD from Texas A&M.


RUSH ROBINETT

* * *

James Stephens, newly hired April 29 as Manager, Business Leadership Development/Training Operations Dept. 3022.

Jim has more than 20 years experience in leadership and management with corporations, academia, and the military. His Sandia responsibilities will be to assess and develop management and leadership programs.


JAMES STEPHENS

He has an associate of arts degree from Palomar College, San Marcos, Calif., a bachelor of business administration from National University, San Diego, Calif., and a master of arts in human resource development from Marymount University, Arlington, Va. Jim retired from the US Navy as a Chief Warrant Officer.

* * *

California

Doug Gehmlich, from DMTS in W80 System Engineering Dept. 8241 to Manager, W80 System Engineering Dept. 8241. Doug joined Sandia in June 1981. His work has been in weapons systems engineering, with experience on the W82, Strategic Defense Initiative, W89, Phase 1 and 2 Advanced Development, and the W80.


DOUG GEHMLICH

He has a BS in electrical engineering from the University of Utah and an MS in electrical engineering from the University of California, Berkeley.

July and August promotions coming in next issues.

Sandia Classified Ads

MISCELLANEOUS

PITCHING HORSESHOE SET, 4 shoes, 2 steel stakes, $20 OBO. Smith, 296-1908.

ANTIQUE ARMOIRE, $500. Van De Valde, 293-2722.

PETITE CLOTHES, name brand, new shoes, suitcases, exerciser & more. Sedillo, 255-0669.

SOFA, Sherrill, green & melon chintz, $450; china cabinet, Drexel Heritage, lighted, $775; both excellent condition. Benson, 286-6245.

LOVE SEAT RECLINER, individual controls, La-Z-Boy, $200; beautiful mahogany end table, $30. Kopriva, 897-0140.

"CHERISHED CREATIONS," arts & crafts show, Cottonwood Mall, Balloon Fiesta, Oct. 4-13, free parking, free admission. Self, 296-4137.

REFRIGERATOR, subzero, built-in, w/icemaker, wood trim, 36-in. wide, $170; kids' bikes, 2, $30 ea. Chapa, 822-1528.

MOTORCYCLE JACKET, Cortech, XL, liner, $75; Santa Cruz snowboard, 142cm, $75; Burton boots, size 9, $50, size 10, $75. Krivitzky, 897-9104.

MICROWAVE, Sears, sealed in carton, stock #20-61282, 1.1 cu. ft., 1100W, recessed turntable, quick touch sensor, sensor reheat, $65. Weston 350-7059.

MOVING BOXES, approx. 25, various sizes, $30. Holmes, 873-5255.

TWO END TABLES, 1 coffee table, $25 ea. or $70 all; double stroller, Peg Perego, paid $450, asking $150. Davis, 294-1378.

NOAH'S ARK THEME: complete crib bedding, lamp, 2 pictures, light switch, sun catcher & clock, $50. Mounho, 299-0883.

BAND SAW, 12-in., Craftsman, w/stand, almost new, moving, must sell, $100 firm. Callahan, 298-6674.

BEDROOM SET: 3-pc., full-size headboard, mattress, chest-of-drawers, dresser, mirror, 15 yrs. old, good condition, $250. Aragon, 255-8451.

MINIATURE SCHNAUZER, 1-yr.-old female, spayed, white, 16-lbs., wonderful companion for couple or single, no children. Sargent, 865-3227.

ROTOTILLER, Troy-Bilt Pony, $100. Koch, 856-1362.

TODDLER BED, w/mattress, $50; OEM-alloy Star Style 5-hole rims, from '95 Jeep Wrangler, excellent condition, $250 OBO. Edge, 271-0738.

MEN'S WATCH, Movado, new in box, 18k-gold-plated, black leather band, retail $250, asking $195. Gamblin, 828-9246.

GO-PED, Bigfoot model, adult-driven, clutch, disc brake, seat, off-road tires, gas powered, $650. Kaiser, 828-1660.

GEORGE STRAIT TICKETS, Oct. 18, face value, including taxes, shipping & fees, $80 ea. Chavez, 265-7331.

WOOD FRAME TV, 27-in., clear picture, good for college student, $40. Flemming, 268-1840.

RV TIRE COVERS, 15-16-in., cloth/vinyl, w/bungee holders, 5, $15; 16-in. RV awning, fabric & roller, white/green, good condition, $60. Molecke, 296-5850.

WHEELCHAIR SCOOTER, Leisure Fit Pace Saver, teal green, basket, new batteries, nice, retails $2,999, asking $1,000 OBO. Sanchez, 898-9598.

COMPAQ LAPTOP 128MB RAM and DVD drive, $45 ea.; PCM/CIA LAN/modem card, $40; laptop trackball, $15. Hale, 298-1545.

INDOOR ROWER, Concept 2, professional quality, like new, $450. Harris, 869-3702.

VERTICAL BLINDS, Levolor, cloth, burgundy, excellent condition, 118W x 88T & 112W x 84T, $600 OBO. Feldner, 286-8157.

WASHER & ELECTRIC DRYER, Kenmore 80 series, 6 mos. old, $500; oak entertainment center, excellent condition, $75. Hodges, 286-8429.

RADIAL-ARM SAW, stand-mounted, like new, shafts for 20,000 rpm router, 3,500 rpm sander, $250. John, 345-4006.

SOUTHWEST AIRLINE TICKET, 1 way, good anywhere Southwest flies, expires Jan. 5, 2003, includes drink coupons, $115. Epperson, 271-9880.

CAR-TOP CARRIER, Sears X-Cargo, 20 cu. ft., $75 OBO; Sears Craftsman, 10-in. radial saw, w/table & metal stand, $475 OBO. Garcia, 268-3848, after 5 p.m.

SONY PLAYSTATION, Sega Saturn, Nintendo 64, GameCom, w/controllers & games; fog machine; sand paintings; 3-pc. entertainment unit. Brionez, 821-0868.

DISK PADS, '77 Wagoner, $10; Olds shop manual (1998); '69-'72 Sony color TV manual, free. Fink, 286-1858.

PUNCHING BAG, Everlast, 100 lb., w/stand, other side for speed bag, $100 OBO. Sanchez, 379-3012 or 292-1982.

POOL TABLE, Brunswick, full-size, 4' x 8', 3/4-in. slate, $550; commercial-type warehouse stepladder, 10 ft., $150 OBO. Herrera, 833-5035, keep trying if no answer.

USED APPLIANCES: Kenmore washer, Magnavox color console TV, 14-in. Gateway monitor. Miller, 332-4845.

TREADMILL, Weslo Cadence 815, 13" x 40" belt, 0-5.0 mph, good beginner unit, $70 OBO. Hole, 255-1444.

EXERCISE BIKE, Schwinn DX900, electronic timer, speed, rpm, etc., like new, $50. Hammons, 281-1205.

BABY ITEMS: Safety First truck-style walker, $15; rocking Tigger, $10; swing & slide w/play deck, $25. Woods, 828-2562.

QUINTET SPEAKERS, Klipsch, 200W, new, $175; pair of clothes line poles, $20; '80 Suzuki GS1000 motorcycle, $1,200. Brion, 266-0791.

PORTABLE FIREPLACE, Coleman Bonfire, new/unassembled, wheels, doubles as charcoal grill, 27-in. diameter, retails $250, asking $100. Cancilla, 298-8741.

'02 DELL, Pentium 4, 1.6GHz, 15-in screen, 40GB ultra hard drive, floppy, Windows XP, integrated network card, 8XCD-RW/DVD, 1 mo. old, $1,950. Donald, 263-2668.

METAL LATHE, Atlas TH54, 3 & 4 jaw chucks, milling attachment, center rest, collets, complete, good condition, $1,850. Adams, 881-4351.

ALTO SAX, good condition, excellent student or beginner sax, valued at $600, asking $300 OBO. Evans, 463-6877.

MINK COAT, size 10, black, full length (44-in.), Raglan shoulders, straight sleeves, appraised $4,000, asking $2,500. Lampson, 281-2506.

AMERICAN PIT BULL PUPPIES, 7 wks. old, 2 males, 2 females $100 ea., 1 male, $150. Bogdan, 332-3179.

COOKBOOKS, *Southern Living Annual Recipes*, complete set, 1979-2001, plus master index, sold as set, $400. Allen, 821-3612.

EXERCISE BICYCLE, professional, Diamondback HRT 1000, commercial grade, large computer readout, programmable, $500 OBO. Burstein, 899-8971.

SOFA, w/6 throw pillows, Rowe, excellent condition, purchased at Academy Furniture for $900, asking $600. Garcia, 232-2010.

LAWN MOWER, Lawn Boy, commercial, power drive, rear bagger, $100; McCullough chain saw, $75; Stihl gas line trimmer, $90; men's golf clubs, $40. Gluvna, 884-5251.

FUTON BED/COUCH, bottom folds into queen sleeper & top is a full sleeper, $150; Baca trumpet, $200. Hoffman, 352-2089.

SOUTHWEST AIRLINES SPECIAL PASSES, roundtrip, no blackout dates, no tax, guaranteed seat, unpublished routes allowed, $300. Lieberman, 299-7739.

SOFA, red & white, Asian pattern, fabric somewhat worn but in good condition, $75 OBO. McLendon, 797-2675.

BEANIE BABIES, all tag protected & bagged, many retired, $4 ea. or 3 for $10. Kureczko. 286-4426.

NIKON N6006 CAMERA, w/28-80 mm f/3.5, 5.6 auto focus lens, 3 light meters, & auto film handling, $150. Diprima, 275-3479.

BMI9000 MULTISTATION GYM, 150 lbs. weights, $175; Pinnacle sleeping bag, brand new, +5 to +15 comfort zone, $40. Barnard, 856-1952.

MEXICAN CEILING LAMP; windows, 3-8x6-8; 8x8x16 blocks; thermal storage rods; small HWHs; hanging fireplace; folding doors. Talbert, 298-9036.

SMALL DRAFTING TABLE/DESK, w/chair, light color, $60; dining table, w/4 chairs, glass top w/brass, 5' x 3', $75. Gabel, 296-9205.

UPRIGHT FREEZER, 6 cu. ft., $75; Universal sliding screen door, $25; reptile terrarium, 4-ft., Birch, $150 OBO. Keahbone, 792-3251.

BICYCLE, girl's 16-inch Huffy, w/training wheels, $20; Little Tykes kitchen, $20; Fisher-Price laundry center, $10. Clement, 293-1416.

UPRIGHT FREEZER, Sears Kenmore, 15 cu. ft, like new condition, $150 firm. Chavez, 792-1673.

PHONE/FAX MACHINE, Panasonic Model KX-FP80, used very little, in new condition, $75 OBO. Mooney, 294-5161.

WASHER/DRYER, both work; 2 old leather sofas, Brazil Contempo; all free if you pick up. Peterson, 254-0918.

TRANSPORTATION

'96 HONDA ACCORD, 4-dr., loaded, black, 85K miles, warranty, 1 owner, $10,000 OBO. Watson, 833-1986.

FORD CONTOUR, 4-dr., AT, PW, PL, cruise, tilt, great condition, 45K miles, $7,000 OBO. Maestas, 710-0724.

How to submit classified ads

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

- **E-MAIL: Michelle Fleming (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 Michelle at 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.**

'96 CHEVY SILVERADO Z71, 4WD, ext. cab, AM/FM/CD, matching shell, bed liner, tow package, allow wheels, excellent condition, 55K miles, original owner, $15,650. Dwyer, 271-0741.

'89 GMC SIERRA SLX 2500, 4-spd., V8, posi-traction, AC, PS, PB, new clutch, excellent condition, 120,717 miles, 1 owner. Maynard, 865-1288.

'02 EXPLORER SPORT, leather, all power, moon roof, premium sound, very low miles, immaculate, excellent condition, $23,000. Garland, 400-6047.

'71 FORD F350, 8' x 12' flatbed/dump, 360, 4-spd., headers, new rear springs, windshield, alternator/regulator, water pump, $3,800 OBO. Schweitzer, 281-6668.

'02 DODGE RAM SLT, 4x4, AT, Gibson headers/muffler, lots of extras, paid $26,000, asking $24,000 OBO. Sanchez, 480-2432.

'92 ACURA INTEGRA, 5-spd., red, maintenance records, very good condition, inside/out, 136K miles, $4,000 OBO. Velasquez, 299-2253.

'91 JEEP CHEROKEE SPORT, 4-dr., 4WD, 160K miles, good condition, runs great, $2,500 firm. Dye, 897-0304.

'91 MAZDA MIATA, 5-spd., red, camel top, approx 93K miles, runs OK, needs some work, $3,000 OBO. Fleming, 237-0908.

'93 TOYOTA COROLLA DX, AC, AM/FM cassette, high miles, mostly highway, well cared for, below book, $2,895. Pound, 899-9123.

'95 MAZDA MIATA, black on black, low miles, great condition, below book, $7,000. McDonald, 821-3215.

'92 NISSAN PATHFINDER XE, PS, PB, AC, AM/FM cassette, racks, extremely clean, excellent mechanically, 165K miles, $4,200 OBO. Roesch, 281-9751.

'99 CHEVY TAHOE, 4WD, fully loaded, excellent condition, 66K miles, $18,500 OBO. Salazar, 565-0038.

'65 FORD MUSTANG, convertible, 289 V8, AT, restored like new, red w/white top, Pony interior, $19,500. Gruebel, 323-2414.

'80 CHEVROLET CAMARO, V8 GM reman., white w/t-top, excellent mechanical condition, $3,400 OBO. Rager, 771-4405.

'97 FORD F-150 SUPERCAB, 3-dr., 4.6L V8, 4x4, long bed, Lariat pkg., tow pkg., 63K miles, $16,000. Vernon, 892-6571.

'85 JEEP CHEROKEE, 4WD, 4-spd. manual, 85K miles, new water pump, radiator, & battery, $2,000. Newcom, 293-5180.

'94 LEXUS LS400, leather, power; sunroof, 92K miles, $13,500; '91 GMC Suburban, 4x4, 1 owner, 179K miles, AC, records, $3,300. Shephard, 856-5762.

'59 CORVETTE CONVERTIBLE, red w/white coves, hardtop, outstanding condition, professionally restored, gorgeous. Atcitty, 260-4911, ask for Cyndi.

'95 CHRYSLER CONCORD, 4-dr., 84K miles, excellent condition, well-maintained, plum color, $6,700. Schneider, 296-0868.

'98 TOYOTA TACOMA X-CAB, red, SR5, AC, PS, PB, cruise, tilt, AM/FM cassette, bed liner, alarm, new brakes, 92K miles, $9,200. Brangan, 866-1563.

'97 MAZDA MIATA MX-5, M-Edition, green convertible, 2,800 miles, rarely driven, theft protection, mint condition, $11,500. Hays, 293-3386.

RECREATIONAL

'88 COUNTRY COACH RV, 32 ft., 454 Chevy, w/Banks power pack, Steersafe, new batteries, Michelin tires, excellent condition. Syme, 822-1321.

'89 KAWASAKI 650SX JET SKI, stand-up model, needs tune-up, $2,000 OBO. Chavez, 323-9343.

'98 HONDA ST1100, sport-tourer, black, hard bags, garaged, fast, comfortable, reliable, many extras, like-new condition. $8,200. Fischer, 856-1410.

'99 HONDA REBEL 250, mint condition, 2,700 miles, ready to ride, $2,000. Wells, 292-0179.

'98 TROPICAL MOTOR HOME, 35 ft., AC, Vortex Chev., slide-out, all awnings, all the extras, like new, 13K miles, $62,500. Terry, 237-2288.

JET SKI TRAILER, single, excellent condition, $400. Sierra, 275-0520.

GO-CART, Manco, off-road, seats 2, all safety equipment & trailer included, used 1 season, $4,000 OBO. Fajardo, 232-9303.

'86 DAHON FOLDING BICYCLE, 3-spd., 16-in., includes carrying case, used very little, $275. Kobs, 281-1102, www.dahon.com/piccolo-intl.htm.

'49 PIPER CLIPPER, 1/3 share, 125-hp, tail-dragger classic, Moriarty airport, $6,000. Wilcoxen, 296-8295.

FISHING BOAT, 15-ft. fiberglass, 2 swivel seats, 35-hp Evinrude, trolling motor, trailer, no current registration, $400. Dawson, 281-1235.

'99 NITRO SKI/FISH BOAT, 17-1/2 ft., 120-hp outboard motor, trolling motor, great condition, $10,500. Cox, 864-0930.

'86 SUZUKI LT185G QUADRUNNER ATV, 1 owner, garaged, 425 miles, excellent, $1,000. Jones, 292-1581.

BIANCHI 12-SPD ROAD BIKE, new tires, tubes, & pedals, excellent condition, $100 OBO. Nelson, 459-9225, ask for Dave.

'94 YAMAHA FZR-600 MOTORCYCLE, 10K miles, good condition, $3,200 firm. Lucero, 385-2988.

REAL ESTATE

2-BDR. MOBILE HOME, 2 baths, 1,008 sq. ft., many deluxe amenities, clean, great value, Four Hills Park, compare, $21,900. Padilla, 332-8248.

1-BDR. CONDO, Juan Tabo/Mountain Road, quiet neighborhood, gated community, $34,500, 10% down, REC the rest at 6%. Shahinpoor, 228-7077, ask for Mo.

3-BDR. HOME, 1-3/4 baths, 1,728 sq. ft., office, spacious kitchen, double lot, RV access, garage, I-40 & Eubank, $145,000. Andrews, 237-2728.

2-BDR. HOME, 1 bath, 1,200 sq. ft., 2 living areas, hardwood floors, new roof, all appliances, REC, cash. Hollis, 604-0443.

2 ACRES, quiet, view, utilities, 0.8 miles east on Frost Road from 217, north on Maplewood to #19, $35,000. Rumpf, 298-7839.

2-BDR. CONDO, 2-story, 1,141 sq. ft., NW, Arroyo Del Sol, excellent condition, $88,000. Lahusen, 792-0990.

4-BDR. HOME, 2-3/4 baths, 2,000 sq. ft., w/guest room, great mountain view, shown by appointment to pre-qualified buyers, flexible terms, $165,000 Chavez, 294-4184.

4-BDR. HOME, 1-3/4 baths, 1,968 sq. ft., cul-de-sac, LR/FR, beautiful landscaping F/B, hot-tub, recent carpet/paint, covered patio, $154,000. Serna, 899-9618.

3-BDR. ADOBE HOME, beautiful, 2 baths, patio, brick floors, 3 FPs, den, dining, 2-car garage, great NE location. James, 296-1029.

2-BDR. MOBILE HOME, 1 bath, '93, located in 4 Hills MH Park, shed, carport, AC, ceiling fans, $19,000. Lucero, 299-6842.

3-BDR. HOME, 1-3/4 baths, 1,500 sq. ft, North Four Hills, new carpet/paint, built 1995, landscaped, auto sprinklers, great views, $165,000. Jones, 296-2796.

3-BDR. HOME, 2 baths, 1,200 sq. ft., near Unser and Ladiera NW, vaulted ceilings, landscaped, 5-years-new, $109,500. Dunivan, 352-2406.

3-BDR. HOME, 2-1/2 baths, 2,050 sq. ft., 4-1/2 yrs. old, 2-car garage, shed, b-ball court, Unser/Ouray, walk to park & Petroglyphs, $157,500. German, 839-1583.

WANTED

TAILGATE, for '86 Ford F250. Charley, 344-6864.

HOUSEMATE, quiet female, 10 min. from SNL, share washer/dryer, kitchen, heated pool, $300/mo., includes utilities. Moore, 271-5237.

POP-TOP TRAILER, less than 8 ft. long folded up; small gas range, 4 burners & oven, approx., 20-in. wide. Thomas, 281-0585.

QUIET HOUSEMATE, condo, private bath, washer/dryer, garage, Spain & Wyoming NE, $426.50/mo + 1/2 utilities. Hayes, 823-6457.

GOOD HOME, adult Labrador dogs, yellow & chocolate male, approx. 7 yrs. old, outside dogs, need a fenced area, willing to split up. Peery, 281-7223, ask for James.

GOOD HOMES, to foster adorable cats/kittens, please share your love. ACAT, 323-2228.

MOTORCYCLE, Honda XR250, preferably w/street-legal plate. Plummer, 823-1619.

PAINTBALL GUN, in good to excellent condition. Prior, 281-5532.

METAL CHOP BOX, 10-in. minimum, good quality, not heavily used. Menicucci, 842-6330.

MULTILEVEL CAGE, for small pet rat. Figiel, 856-0042.

RIDING MOWER, or small garden tractor, 8- to 20-hp, must run, under $400. Swahlan, 286-2808.

GOOD HOME, 1-yr.-old puppy, loving, half Dalmatian/half Great Dane, medium-size dog. Sanchez, 720-9078.

GOOD HOME, Siamese cat, 10 yrs. old, small spayed female, needs home without other pets. Woods, 281-0477.

BABYSITTER, for preschooler, in pleasant nonsmoking Ridgecrest home, 1 evening/week, references required. Mills, 256-4110.

USED HANDBOOK, CRC Chemistry/Physics, for purchase or donation to mid-school physical science class. Sobolik, 292-3959.

AUTO PARTS, for '70 Corvette, interior, exterior & drive train. Briand, 821-1904.

FINE WOODWORKING, issues 13, 14 &17 to buy or borrow. Long, 296-2590.

VOLUNTEER, greet the world at the front desk, National Atomic Museum, 4 hrs. weekly. Eakin, 245-2137, ext. 110.

DONATIONS: Shandiin Child Development Center needs Southwest airline tickets, teachers to fly to conference in New York, Nov. 20-22; gently used glider, to feed babies. Flores, 362-3752, ask for Desiree.

GOOD HOME, kittens, black, 14 wks. old. Ekman, 294-8852.

CHILD-CARE, in my home, Monday, Tuesday & Wednesday, early evening. Sanchez, 315-1751.

GOOD HOME, 2-yr.-old cats, brother/sister, neutered, spayed, very affectionate, excellent w/children. Hopkins, 286-7823.

FOOTBALL FANS, to get group rates on tickets for Detroit Lions on Dec. 8 in Phoenix. Nickerson, 298-5634.

HOUSE TO SIT, in Albuquerque, Jan.-Feb., experienced senior, no fee. Otey, 916-608-9153.

LOST & FOUND

FOUND: set of keys, blue lanyard with the word "sport," purple Sandia National Laboratories key ring, vicinity of Los Lunas High School. Fleming, 844-4902, ask for Michelle.

Lab News *Reader Service*

Retirees (only): To notify of changes in address, contact Carol Wade, Benefits Dept. 3341, at 505-845-9705, e-mail cawade@sandia.gov, or Mail Stop 1021, Sandia National Laboratorties, Albuquerque, NM 87185-1021.

Others: To receive the *Lab News* or to change the address (except retirees), contact Michelle Fleming, Media Relations and Communications Dept. 12640, at telephone 505-844-4902, e-mail meflemi@sandia.gov, or Mail Stop 0165, Sandia National Laboratories, Albuquerque, NM 87185-0165.

Abilities, not disabilities, are qualities of gifted Sandians

By Iris Aboytes

Every day Sandians face many challenges. How to counteract terrorism, how to help the health industry, how to produce more energy. From one equation to another, one idea to another, each challenge is being met.

In our midst are Sandians who have abilities that help in our strife to meet these challenges.

Meet Joe Durham (10511) and Mitzie Bower (12620).

October is . . .
Disability Awareness Month

Joe works in support of Sandia's Spend Plan application, Project Setup, and the Oracle Project accounting module. If his name sounds familiar, it is because he is the friendly voice that welcomes you to the budget hotline. "I enjoy our customers, I get so much personal satisfaction from helping them," he says. "I know them all by their voice."

Joe has been at Sandia 16 years, three of them as a contractor with Career Services. Joe attended the University of New Mexico and earned a degree in history, then decided to return to school and learn more about computing and data processing.

Joe, being selective, says one of the best memories of his teen years was his dad showing him how to drive a van. His father, a retired Navy captain, was not very calm as Joe was learning and his dad was both a passenger and default instructor.

Mitzie came to Sandia 19 years ago. She provides graphics to Engineering Sciences Center 9100. Multimedia presentations, web pages, T-shirts, etc., she does it all. Mitzie's degree is in fine arts from UNM. She credits her mom's strong encouragement for her college education. "You can't expect me to take care of you the rest of your life," her mother would say.

Mitzie is a self-confident Sandian who is married to her best friend, Tim. "Tim gives purpose to my life. When I met Tim, it was St. Valentine's Day and I took him cookies. In no uncertain words, he told me to leave him alone as he lay facing the floor from a Stryker-frame bed. I said, 'OK. Have a nice life.' He, of course, would not have said that if he could have seen how cute I was."

Both Joe and Mitzie raise the standards for Sandians. They both work out of wheelchairs. Both of their injuries were sports incurred, and both of their injuries occurred one week short of their senior year in high school.

Mitzie says she has been treated like a "princess" at Sandia. Joe says he has helped relax the way his colleagues interact with individuals who just happen to have disabilities. Mitzie and Joe credit their immediate families for their strength and well being.

The exuberant Mitzie is excited about her next home project, painting a life-size cast polyurethane horse with wildlife imagery. She says Tim, also in a wheelchair, is inventing a platform to anchor the horse at various tilted angles to allow Mitzie to paint areas she currently cannot reach. "Tim is worth his weight in gold," she says lovingly, "and a true blessing." He and their three dogs bring her life happiness. What would she change? Winning the lottery would be nice!

Joe loves his sports and music. A self-proclaimed sun worshipper, you can visit with Joe every day as his sits in his van at lunchtime soaking in the sun's rays. What would he change? He would have perhaps thought more about what he wanted to do with his life while in college rather than just attending class to earn a degree.

In observance of October as Disability Employment Awareness Month, Tammie McNaughton, director of corporate workforce initiatives at Highmark Blue Cross Blue Shield in Pittsburgh, Pa., says, "Guess what? They're just people like you and me."

JUST ANOTHER CHALLENGE — Mitzie Bower (12620) with the horse she is going to paint. At Sandia, Mitzie provides graphics to Engineering Sciences Center 9100.

ECP Chapter I of III: We are the community

ECP campaign runs Oct. 21-Nov. 8

With fall in the air and winter quietly approaching, on the mind of most Sandians are higher electric/gas bills. Imagine the homeless with no roof over their heads and no coats to keep them warm. The simple cup of coffee that warms our hands is nowhere to be found.

Last year's Sandia/New Mexico ECP (Employee Contribution Plan) and Sandia/California's LEAP (Livermore Employees Assistance Plan) campaigns contributed a whopping $2,181,455 to our communities.

With their generous donations, Sandians provided: counseling for victims of sexual assault and abuse, shelter for the homeless, transportation for the disabled, counseling and educational programs for sheltered domestic violence survivors and their children, funding for life-saving equipment in law enforcement vehicles, and training for officers to operate it.

Any one of us could be disabled by car accident or sudden illness, have a fire in our home, or have an aging parent who needs help. One of the best reasons to contribute is because ECP is not about "us" raising money for "them," because we *are* "them."

When the campaign begins, think of the cup of coffee that warms your hands, and warm the hands of a stranger. — *Iris Aboytes*

One of the best reasons to contribute is because ECP is not about "us" raising money for "them," because we are *"them."*

Feedback

Q: *Are there any plans to develop a web-based option to report telephone problems?*

A: Yes. As you may know, such a system already exists at Sandia/California. The Telecommunications Department in Albuquerque has talked with the Livermore Telecommunications Department about adopting this system. The system in Livermore is based upon a trouble reporting system developed at Sandia/California. In Albuquerque, the trouble reporting system is Remedy Corporation's Action Request System (ARS) and we must integrate the "front-end" of the Livermore system with ARS. We are planning on funding this effort next fiscal year.

— Merle Benson (9334)

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Q: *When flags are flown at half-staff, could the* Sandia Daily News *please tell us why and for whom? Seeing the flag at half-staff is a sobering sight, but if I have no idea why, I feel empty inside. Knowing more would help us honor those who we are trying to honor.*

A: The Kirtland flag is the representative flag of the area at KAFB and Sandia's policy regarding flag status is to follow suit. Generally, the Sandia Incident Commander is notified by the KAFB Command Center when flags should be lowered to half-staff or raised back to full-staff. However, the Command Center may or may not be immediately knowledgeable regarding the reason the flag has been ordered to half-staff, and may not be informed until later in the day. Consequently, in cases where the flag is lowered as a mark of respect for a principal figure, information regarding the honored individual may not always be readily available for public dissemination at the beginning of the business day. – *Al West (3100)*