



ELECTRONICS EXAM — David Clements and Beth Connors test a B61-4 Type 3E trainer using an F-111 Aircraft Monitor and Control (AMAC) package that simulates the electronic control system of several types of US military aircraft. (Photo by Randy Montoya)

Labs-designed B61 weapons trainers being delivered to Air Force, NATO sites worldwide

New trainers help flight-line ground crews practice on more realistic mock-ups

By John German

Improved trainers designed at Sandia to simulate the B61 Mods 3, 4, and 10 family of nuclear weapons have begun arriving at US air bases and NATO sites around the world for use by flight-line ground crews in practice drills.

In recent years weapon loading and handling crews have been unable to complete exercises meant to evaluate their abilities to safely move, inspect, hang from and connect to an aircraft, arm, disarm, and return to storage the B61 3s, 4s, and 10s — versions of the B61 that are similar in appearance and function.

The primary reason, according to evaluators, was that the weapon trainers they were using were not similar-enough to real B61s to ensure the operations would occur smoothly and without error during a wartime scramble. (See “Modern trainers necessary for perfect wartime handling” on page 4.)

Create a new trainer

The previous trainers the military had been using for B61 3/4/10 exercises were originally designed to simulate, both mechanically and

The makeshift mock-ups were hurting proficiency rather than helping.

electronically, other versions of the B61 or were US Navy conventional bomb trainers retrofitted to look like B61s.

In 1997 the Air Force recommended that use of the old trainers be discontinued, noting that the makeshift mock-ups were hurting proficiency rather than helping.

In March 1998 the Air Force Nuclear and Counterproliferation Directorate (AF/XON) asked Sandia to create a new trainer that would mimic the B61 3, 4, and 10 and be unclassified. (See “The new B61-4 Type 3E weapon trainer” on page 4.)

By December 2001 the first six qualified B61-4 “Type 3E” trainers had rolled off the assembly line at DOE’s Kansas City Plant and were delivered to the Air Force.

It is the first loading-and-handling weapon trainer specifically designed to simulate the B61 Mods 3/4/10.

(Continued on page 4)

ECP campaign begins



Annual giving campaign draws out best in Sandians

See stories by Iris Aboytes beginning on page 8.

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NAS report calls broad polygraph testing ‘unacceptable’ for screening labs employees

By Ken Frazier

In a report long anticipated by scientists and engineers at the national labs, the National Academy of Sciences last week said polygraph tests are too inaccurate to be relied on for screening employees to identify spies or other national security risks.

The report said the polygraph’s accuracy is not good enough for security screening. First, accuracy is almost certainly lower when the tests are used this way rather than in the investigation of specific incidents. Second, the large groups of people being checked include only a tiny percentage of individuals who are guilty of the targeted offenses; tests that are sensitive enough to spot most violators will also mistakenly mark large numbers of innocent test takers as guilty. Tests that produce few of these types of errors, such as those currently used by several federal agencies, will not catch most major security violators — and still will incorrectly flag truthful people as deceptive.

“Polygraph testing yields an unacceptable choice for DOE employee security screening between too many loyal employees falsely judged deceptive and too many major security threats left undetected,” the report concluded. “Its accuracy in distinguishing actual or potential security violators from innocent test takers is insufficient to justify reliance on its use in employee security screening in federal agencies.”

“National security is too important to be left to

“National security is too important to be left to such a blunt instrument.”

such a blunt instrument,” said Stephen E. Fienberg, chair of the committee that wrote the report and professor of statistics and computer science at Carnegie Mellon University. “The belief in its accuracy goes beyond what the evidence suggests,” he said at an Oct. 8 NAS news conference in Washington, at which the report was released. The executive summary can be read at www.nas.edu.

The report appears to validate the criticisms of an expanded polygraph program voiced by senior scientists and engineers at Sandia and the two other national weapons labs over the past three years (“Sandia senior scientists question validity of polygraph tests at public hearing hosted by Gen. Habinger,” *Lab News*, Sept. 24, 1999).

“In consensus scientific statements, it doesn’t get any clearer: polygraphs are not worthless, they are worse than worthless, and it is deeply gratifying as well that the Academy echoed the conclusions of the 1999 Sandia Senior Scientists’ report on polygraphs,” says Sandia senior scientist Al Zelicoff (5320), one of the most outspoken critics of polygraph testing.

The NAS committee said polygraph testing rests on weak scientific underpinnings despite nearly a

(Continued on page 3)

US Army orders chem-bio decon formulation in deployment quantities

By John German

A decontamination formulation developed at Sandia that renders harmless chemical and biological warfare agents has been selected for deployment by the US Army Central Command (CENTCOM).

CENTCOM, which coordinates overseas military actions, placed an order Sept. 25 with EnviroFoam Technologies, Inc. for tens of thousands of gallons of the company’s EasyDECON™ solution. The exact quantity ordered is proprietary.

EnviroFoam is one of two US companies granted nonexclusive licenses to the formulation,

(Continued on page 4)

Sandia-aided method to heal wounded and diseased achieves worldwide US government acceptance

By Neal Singer

A disposable plastic bag resembling the common kitchen garbage bag, its interior fed by a simple oxygen canister monitored by inexpensive, deceptively simple plastic instruments, has been licensed by the federal government for worldwide distribution as a tool to heal the sick and wounded in the nation’s government service, both active and retired.

The heightened oxygen content in effect helps

(Continued on page 5)



- 3 Seventy glass-manufacture researchers meet at CRF for annual industry review
- 5 DOE, NNSA agree to pay for MESA, subject to clearing numerous checkpoints
- 6 Sandia-sponsored antiterrorism conference draws more than 400 attendees

What's What

Think Sandians are all geeky, humorless whizkids who don't know their left pocket protector from their right? Well, you haven't looked at some of the responses on the "Your Thoughts, Please" website (<http://www-irn.sandia.gov/newscenter/news-frames.html> and click on the button at the top on the left side). Commenting on surprises about neighbors' perceptions of the Labs, one wrote:

". . . the biggest misconception about Sandians is that people think that we all are rich, over-paid bomb builders. They think that the lowest-paid Sandians probably make \$200K or so per year."

Another wrote: "THEM: Where do you work? ME: Sandia National Labs. THEM: Really? Do you know so and so? ME: No. It's a big place. We don't all know each other. THEM: I'll bet you can't tell me what you do 'cause then you'd have to kill me (chuckle-chuckle). ME: (Said dead-pan or with smile - effect is still the same) True."

And another: "I work so much, I have no time for neighbors or friends. When strangers recognize my Sandia parking sticker in fast food parking lots, they usually ask me if I work with the space aliens and ride in UFOs from the underground base. I say not anymore, they smell bad and the UFOs are always breaking down in the middle of nowhere."

Course, about that "geeky" business - there are those who didn't churn out any funny remarks. . .

* * *

Barry Schoeneman (5323) yields to no one on practical jokes.

Years ago, he writes, a friend brought his lunch every day, and every sandwich and every side item was in a small container.

Every morning the friend put his lunch - neatly packed in a plastic sack - in the refrigerator. One day, Barry was inspired. As soon as the friend disappeared, Barry would put the sandwich in the freezer and re-tie the plastic lunch sack. Then, shortly before lunchtime, he'd take the now-rock-hard frozen sandwich from the freezer and put it back in the lunch sack.

For the first several days, the friend was perplexed as to why only his sandwich and nothing else in his lunch sack was frozen. He also developed theories to explain why other lunches in the same refrigerator had nothing frozen. These theories were sometimes accentuated by his banging his frozen sandwich against his desk.

After a couple of weeks, he resigned himself to removing his sandwich and thawing it in the microwave. The scheme went on for about a month, Barry says, until a day when he was unable to get back to the refrigerator to retrieve the frozen sandwich, and the cat was out of the bag.

* * *

Retiree Jack Tischhauser writes that he resorted to a practical joke once to get even - all friendly, of course - with Tom Kelly, who used to zing him occasionally. Seeing Tom in a supermarket checkout line writing a check, Jack shouted loudly, "Hi, Tom! Haven't seen you since you got out of prison on the bad check charges."

For once, says Jack, Tom was at a loss for words.

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

APS honors Paul Robinson with Pake Prize, Jim Asay with shock-science award

The American Physical Society has awarded Sandia Director C. Paul Robinson the George E. Pake Prize for his outstanding leadership and research accomplishments.

In addition, APS awarded retired Sandia scientist James Asay its Shock Compression Science Award. Jim retired from Sandia Oct. 1 and is now a research professor and associate director at the Institute for Shock Physics at Washington State University in Pullman, Wash. He still serves as a consultant to Sandia.

In awarding Paul the Pake Prize, APS cited him "for his leadership roles as Director of Sandia National Laboratories and as head of the U.S. delegation to the U.S./U.S.S.R. arms control talks in Geneva, and for his pioneering contributions to the development of high explosives lasers, e-beam initiated chemical lasers, and molecular laser isotope separation methods."

"I could not be more pleased that the APS selected me for the George E. Pake Prize," Paul says. "I've always felt that I must be one of the luckiest people on the earth, to be able to pursue a career in physics and also get the chance to serve the nation as a U.S. ambassador. But the Pake Prize is yet another unexpected reward. I want to thank all of the people at Sandia who team with me daily to do the wonderful work of this great laboratory; I am quite sure that it was your contributions that made the difference in this selection."

The George E. Pake Prize recognizes and encourages outstanding work by physicists combining original research accomplishments with leadership in the management of research or development in industry. The prize consists of \$5,000, a certificate recognizing the recipient's achievements, and an allowance for travel to an award ceremony.

Paul joined Sandia in 1990 and became Laboratories Director and President in August 1995. He served as chief negotiator from 1988-90 and headed the U.S. delegation to the US/USSR Nuclear Testing Talks in Geneva. Paul got his BS in physics from Christian Brothers College and his PhD in physics from Florida State University.

In awarding Jim the Shock Compression Science Award, APS cited him "for pioneering personal research in shock compression science, for leadership in developing programs and tools that have strongly impacted the field, and for leadership in the technical community."

Jim worked at Sandia for nearly 32 years, most of that time in the shock physics group performing research on the high-pressure properties of materials. He has a PhD in physics, with a specialty in shock physics.

"Jim has always been one of Sandia's best, and he has produced a large volume of technical work of the highest quality over his career," says Paul. "The recent work he did on equation-of-state measurements represents a major breakthrough in shock physics science and is of enormous value to the nation in the Stockpile Stewardship Program. As is often the case, this exceptional programmatic work is also of fundamental scientific value and will be used by many scientists in the study of astrophysics and the formation of the universe. How fitting that the APS should recognize Jim for this work and a terrific career."

Employee death



JUAN "PETE" REBEIL

survived by his mother, Margaret Rebeil.

Juan "Pete" Rebeil of Systems Technologies Dept. 12572 died in a motorcycle accident Oct. 6. Pete was 39 years old. He joined Sandia in 1988. Pete was a member of the technical staff, working in computer software research and development. He is

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Get your handy pocket guide to emergency preparedness

Guide contains information that could save your life

Know what to do if you receive a bomb threat? . . . or a tank truck spills who-knows-what in front of your building?

Got bandages? Batteries? Fresh water in your home disaster kit?

These are just a few of the considerations contained in Sandia's recently updated *Pocket Guide: Emergency Preparedness*.

Copies soon will be available for pickup in center offices (one copy per employee and contractor, please). Watch the *Sandia Daily News* for an announcement of availability, or contact your center office now to request copies.

The compact guide succinctly details preparations, actions, and cautions for a variety of emergency situations, both at work and at home. Situations covered range from lightning and severe snow storms to hazmat accidents and terrorist attacks.

The guide also contains emergency contact numbers for several Sandia locations.

"It is not all-inclusive," says Bruce Berry (3115), who updated a 1997 version of the pocket guide. "But I think it could come in handy for both preparedness and as a general guide during an emergency."

The guide is geographically generic (not specific to any Sandia site) and will be distributed to most Labs locations, including California, Tonopah, Kauai, Carlsbad, and Pantex.

Review clarifies priorities for glass research partnerships

Seventy glass-manufacture researchers meet at CRF for annual industry review of programs

By Nancy Garcia

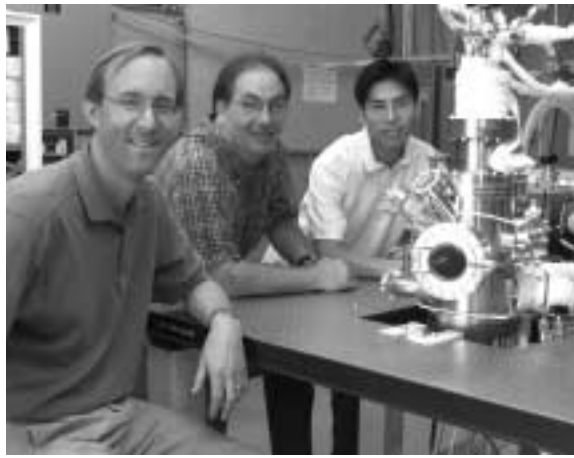
The adage "waste not, want not" underlies research geared to increase efficiencies in one of the most energy-intensive manufacturing industries — glassmaking.

In 1996, leaders in the glass industry partnered with DOE's Office of Industrial Technologies to foster the development and use of advanced technologies and processes. Researchers are investigating ways to sustain high-quality yield while decreasing energy use and protecting the environment.

About 70 glass-manufacture researchers from around the country recently met at the Sandia's Combustion Research Facility for the industry's sixth annual review of programs, in which projects significance to industry needs is assessed. In the future, greater emphasis will be focused on grand challenges and on crosscutting technologies, which will provide greater energy savings and synergies across multiple industries, said Elliott Levine, glass team leader in DOE's Office of Industrial Technologies.

Since 1998, glass companies have joined together through an umbrella organization, the Glass Manufacturing Industry Council (GMIC, www.gmic.org). The DOE began supporting small research projects at the national labs several years ago; the number has grown from three in FY00 to 12 in FY02, said GMIC executive director Michael Greenman.

Among the 17 talks were four presentations about work by Sandia CRF investigators and their industrial partners. Mark Allendorf (8361) and Jill Aaron of the Pittsburgh-based PPG Industries, Inc. discussed their studies to understand and optimize glass coatings. Pete Walsh (8361) described the conceptual design and engineering of a glass-melting laboratory proposed for the CRF. Mark also discussed modeling and analysis of corrosion affecting the longevity of glass-melting furnaces. Pete, meanwhile, presented a fourth project detailing studies of how combustion and chemistry variations affect both emissions and corrosion of a commercial glass-melting furnace operated by a



GLASS COATING LAB — Mark Allendorf, Douglas Cowger, and Yongkee Chae (all 8361) are using this newly constructed stagnation-flow reactor to probe the deposition of tin oxide coatings. The reactor has access for optical diagnostics that can probe either the surface or the reacting gas-phase above a deposition surface. It is part of the new Thin Film Chemistry laboratory built as part of the collaborative project with PPG Industries.

(Photo by Bud Pelletier)

major California wine producer.

Aaron pointed out that 110 million square feet of flat glass is coated each year — mainly for low-emissivity and solar-control windows, but also for solar cells, computer screens, windshields, and photocopy machines. Most of the coating is produced by a process called chemical vapor deposition. Her three-year project with Mark is intended to identify a process design that would double the current efficiency. (The main issues are that only 11 percent of the chemicals are deposited, leading to some \$23 million costs a year for waste disposal, and deposition defects lead to about 15 percent of the coated glass being discarded.)

Mark said that studies of the reacting flow of tin oxide, the main coating for flat glass (also used for containers), have led to real insight into how the reactions are occurring. The investigators have

calculated accurate predictions of the chemical process for more than 75 different kinds of tin compounds, and will try to optimize process conditions using this knowledge (possibly through real-time, online process monitoring).

The work is significant, Mark said, because coated glass is a "very highly value-added product," and the results will be available to benefit the industry as a whole.

A proposed glass-melting laboratory at the CRF just completed engineering design. The lab's focus evolved in a 1999 survey of needs from glass quality to examination of heat transfer issues, Pete said. The DOE funded a conceptual design, and PPG contributed significant in-kind services to complete the engineering design.

As envisioned, the industrial research lab would produce up to 25 tons of glass a day in a 6-by-13-foot melting area. Advanced, noninvasive optical diagnostic equipment would be mounted to one side of the melting area, and more traditional sampling equipment would be deployed from the other side.

To build out, the lab would require just under an estimated \$10 million, Pete said, and could deliver its first results to industry in 18 months.

The pilot-scale research lab would offer several benefits, Pete said. It could explore the use of oxy-

Sandia California News

gen firing, which has been adopted widely in the past decade for greater efficiency and reduced emissions (but which accelerates furnace corrosion). "The full potential of oxygen firing for increased efficiency and productivity in large furnaces has not yet been realized," he said.

The work on heat transfer could be carried over to industries such as aluminum, which also employs oxygen firing, thus benefiting other energy-intensive industries.

Oxygen firing was also a topic of investigation by Mark. Principal investigator George Pecoraro of PPG said in the first four years of the five-year project, they've been able to identify factors leading to corrosion and predict reaction rates.

"If you can put equations on anything as complicated as this," Pecoraro said, "you really start to understand it, and we've really been pleased with the work."

Mark said they've learned there are at least five processes contributing to corrosion of the brick ceilings of the glass-melting furnace. Corrosion is accelerated by the presence of water and sodium hydroxide above the melt (whose concentrations vary with temperature). The findings have been submitted to the *Journal of Glass Science and Technology*.

"We've learned it doesn't take much of a fluctuation (in sodium hydroxide) to either turn on, or turn off, corrosion," Mark said. The problem affects overall efficiencies, Pecoraro said, since faster corrosion leads to more frequent furnace rebuilds — at a cost of about \$10 million each time.

For slightly more than a year, several Sandians under Pete's guidance have been working with Gallo Glass to prototype diagnostic equipment for process control so emissions and corrosion will be lessened.

The equipment under investigation is a continuous monitor that detects metals in the flue gas. Field tests (two have been conducted so far for a total of 2.5 weeks) correlate the presence of metals such as sodium or potassium in the flue gas with overall observed efficiencies and operating conditions.

Based on the results of earlier work at Gallo Glass during 1997 and 1998, the researchers also developed a model to assess tradeoffs from modifying operation to minimize development of corrosive gases (such as sodium hydroxide) and thus reduce ceiling corrosion rates.

Pete has accepted a faculty position at the University of Alabama at Birmingham, so Linda Blevins (8361) will continue to oversee the remaining 18 months of this three-year research project.

Polygraph

(Continued from page 1)

century of study. And it said much of the available evidence for judging its validity lacks scientific rigor.

The report notes that the federal government relies heavily on polygraph testing to identify people who have committed or might commit espionage and sabotage. However, the report warns that overconfidence in this method may endanger national security objectives by creating a false sense of security among lawmakers, government employees in sensitive jobs, and the general public. As a result, other ways to ensure safety could be neglected, creating situations that might increase the risk of security lapses.

Following release of the report, Linton Brooks, acting administrator of the National

Nuclear Security Administration, said DOE and NNSA would carefully review the report and, as required by law, consider the findings in developing a new polygraph program over the next several months. He said polygraphs are not used in isolation and noted that the Academy committee recognized "the fundamental conflict that we in the national security community must address: how to administer a program that is maximally effective in weeding out security risks while minimizing damage to the vast majority of loyal, patriotic employees. There is no easy answer, but it is a question that we will examine very seriously in the coming months."

US Sens. Jeff Bingaman, D-N.M., chairman of the Energy and Natural Resources Committee, and

"At long last the polygraph has been relegated to the ash heap of bad ideas."

Al Zelicoff

Pete Domenici, R-N.M., issued a joint statement calling on DOE "to abolish its current policy of using extensive polygraph testing as a screening tool for DOE employees and employees of national defense laboratories, including Sandia and Los Alamos."

Bingaman had called for the National Academy of Sciences study after Congress required DOE to implement a polygraph program to screen applicants and current employees.

"Polygraph tests may have a role to play in law enforcement, but they don't work as a screening tool for our national laboratories," Bingaman said. "In the panic to protect classified information, Congress rushed to implement a policy that had the effect of treating prospective employees as suspects. Now we have scientific evidence that it doesn't work. It's time to change this flawed policy."

In a letter to Energy Secretary Spencer Abraham the day the report was released, Bingaman and Domenici urged him to begin revising the polygraph policy, to a "new, significantly scaled-back program."

Says Al Zelicoff: "Now the national labs directors have all of the support they need to put into place a continuous quality assurance program — including review of a sample of polygraph videotapes — so that until the entire polygraph program goes away, individual lab employees are no longer brutally demeaned or even assaulted by polygraphers with intrusive personal questions or accusations of lying. From now on, any polygraph should consist of the four national security questions and nothing more. It ought to take 15 minutes, and not four hours."

"After consultation with staff members in the offices of our two senators, I am highly confident that the DOE polygraph program will be history in a month or two," Al told the *Lab News*. "Other agency' polygraphs will follow suit shortly thereafter. At long last the polygraph has been relegated to the ash heap of bad ideas; once rid of the pervasive climate of fear and paranoia that polygraphs have introduced into the labs, we can focus unfettered on what we do best — real national security."

B61 trainer

(Continued from page 1)

Three new B61 Type 3Es are being delivered to the Air Force each month. The entire production run of 51 units should be completed by March 2003.

The new trainers incorporate refurbished or scrapped parts from excess B61 trainers as well as new materials and designs.

Better than War Reserve

In some ways, the new Type 3E design had to be better than a War Reserve (WR) weapon, says Sandia project leader Beth Connors (2111).

A trainer is going to get used thousands of times, so it must be robust enough to endure flight-line conditions — vibration, shock, temperature, humidity, and electromagnetic variability — repeatedly over many years, she says.

A new process to inexpensively coat the

Modern trainers necessary for perfect wartime handling

Practice makes perfect. And when you're preparing a nuclear weapon for flight under the wing of an aircraft, doing it perfectly is the only option.

That's why US Air Force and NATO flight-line loaders and handlers — mostly 19- to 22-year-old airmen and women for whom this is their first real job — spend a lot of time practicing.

Because of the safety and security risks involved and the repetitive punishment to the weapons, the military prefers not to use real nukes for training.

Instead, ground crews roll nuclear weapon mock-ups called trainers out of storage bunkers, hang them under the wings of fighter aircraft and bombers, perform preflight checks, arm the weapons, disarm them, and return them to storage.

Modern trainers such as the new B61 Type 3E are designed to look and behave like real nuclear weapons.

The new B61-4 Type 3E weapon trainer

The new B61-4 Type 3E includes:

- A Weapons Simulation Package (WSP), the internal brains of the trainer that simulates B61 3/4/10 electrical signals, including a monitor logic simulator, PAL system simulator assembly, new integrated circuit processor, new software, and new electrical filters and regulators. (PAL, for Permissive Action Link, is a secure code system that ensures a nuclear weapon can be armed and deployed only by an authorized user.)
- A Preflight Control (PFC) system that allows PAL operations with the new Code

Management System (see the Jan. 11, 2002, *Lab News* for more about CMS), and other weapons operations.

- New PAL capabilities that allow handlers and pilots to perform more preflight ground procedures, and insert arming codes from the cockpit.

- Connectors, cables, plugs, seals, lugs, lid, housing assemblies, knobs, and switches precisely like those on a WR B61 and that interface with the aircraft.

- Compatibility with F-111, F-15, F-16, and B-2 aircraft.

Type 3E with a tough polyester powder coating rather than paint won a 2000 DOE Defense Programs Award of Excellence, she says, just one example of the added durability and cost effectiveness of the design.

Also, because the Type 3E is going to be "hooked up to a multimillion-dollar aircraft, we need to make sure our trainer cannot cause a problem on that aircraft, mechanically or electrically," she says.

As part of the trainer's aircraft compatibility and certification process, Sandia used F-111 and F-16 Aircraft Monitor and Control (AMAC) System simulators in the lab — essentially "aircraft in a box" — to simulate the electronic control system inputs of each type of aircraft and check the Type 3E's responses.

Each trainer is tested against a real F-111-type AMAC package as it rolls off the assembly line to ensure the trainers are working as designed. (Although the Air Force no longer uses the F-111 aircraft, it is representative of several relevant aircraft systems.)

Sandia also designed a suitcase-sized version of the Type 3E trainer itself (its electronic guts in compact form) and visited eight different Air Force bases and NATO sites, hooking the box up to actual aircraft.

Vast collection of capabilities

All the Type 3E's system design, circuit

design, software development, and systems integration was done at Sandia, says Beth.

An example: The Type 3E's SA3960 ASIC (application-specific integrated circuit), designed and produced at Sandia's Microelectronics Development Laboratory, was at the time the largest standard cell design fabricated at Sandia.

The project involved some 75 people currently or formerly in the following organizations (in numerical order): 10, 1733, 1734, 1735, 1737, 1811, 2000, 2100, 2102, 2105, 2111, 2112, 2113, 2115, 2116, 2331, 2332, 2613, 2662, 2912, 2913, 2991, 8205, 12125, 12316, 12323, 12326, 12335, 12336, and 14011.

"This project demonstrated the value of having such a vast collection of capabilities and resources under one roof," she says.

In addition, both NNSA/AL and US Air Force representatives played major roles in supporting the project in multiple areas, she says, including funding support, collection of assets, production, and logistics support.

"Everyone believed we were doing the right thing for the right reasons and wanted to see this project succeed," she says. "Their support was instrumental in the success of the project."

"It was very important to our customer to have a high-quality product in the field on time," says John Stichman, VP for Weapon Systems Div. 2000. "The team really came through. I am very proud of them."

Decon formulation

(Continued from page 1)

under development at Sandia since 1997.

The formulation neutralizes both chemical and biological agents and is nontoxic, noncorrosive, and environmentally friendly. (For more, see <http://www.sandia.gov/media/cbwfoam.htm>.)

The Sandia formulation, on which EasyDECON™ is based, is proven effective against both biological and chemical agents, can be applied with current military hardware, causes no collateral damage (such as corrosion of equipment), and creates an effluent that can be washed down the drain.

The Army's order possibly signals a decision to start replacing DS2, CENTCOM's previous decontamination formula, for use "where the real potential exists for biological and chemical warfare," says EnviroFoam President and CEO Peter Beucher.

Because existing Army procedures and practices are based on DS2 liquid-spray approaches for decontamination, initial applications of EasyDECON™ will likely be as a liquid spray.

"Our entire team is extremely proud of the vote of confidence demonstrated with this first major acquisition of what we anticipate to be the next generation of decon materials," says Beucher. "It is rewarding to realize that American soldiers will finally have the protection afforded by this novel technology."

"It's gratifying that a DOE-sponsored effort to help the civilian community deal with terrorism will also play a key role in protecting our military," says Larry Bustard, Manager of Chemical and Biological Technologies Dept. 6245. "Our team is very proud of the opportunity we have been provided to help protect the nation's security."

Versions of the Sandia formulation supplied both by EnviroFoam and Modec, the other Sandia licensee, were used to help clean up federal buildings in Washington, D.C., and TV network headquarters buildings in New York following the anthrax-letter mailings in October and November 2001.

The formulation was developed and refined by a team including Maher Tadros (16000), Mark Tucker, Cecilia Williams, Rita Betty, Paul Baca, Caroline Souza (all 6245), Joanne Paul (former Sandian), and Larry.

An ongoing Army-sponsored effort to investigate the extreme-environment impact on the formulation's performance is being supported by Gary Brown (6233), Danny Engler, and Mollye Wilson (both 6245).

Putting Segway through its paces



WHOA THERE, SPEED RACER — Ed Williams Jr. (10862) has the Labs' only Segway Human Transporter. This tool, developed by inventor Dean Kaman as an alternative means of transporting people, has been seen on Good Morning America and Jay Leno. Currently, it is being used by mail carriers and meter maids in New Hampshire and New York, and is being experimented with by Disney Cruise Lines. It stands on two wheels, controlled by two motors operated by two computers and five electronic gyroscopes. Ed bought the Segway HT to demonstrate another possible way of moving about here at Sandia, and though he currently stands/rides alone, he expects Sandians will see the value of the device and order more in the future. Until then, have no fear, the Segway HT has a maximum speed of 12.2 mph. (Photo by Bill Doty)

DOE, NNSA agree to pay \$518.5 million bill for MESA . . . if . . .

Energy Department's many checkpoints limit buyer's remorse

In the deliberately paced construction world of the gigantic MESA project — Sandia's \$462.5 million Microsystems and Engineering Science Applications center — it's still midsummer in the baseball season as relatively small, hardly noticed achievements move the massive project along toward its own World Series of above-ground construction, equipment installation, and staffing.

In the latest mid-season step, according to MESA Program director Don Cook (1900), the DOE and NNSA have now agreed to pay the entire estimated cost of MESA, including an additional \$56 million in operational costs — but only after NNSA formally reviews MESA's completed baseline engineering-design plans and finds them feasible. Don expects this step to be completed in the next six months.

"With DOE approval, NNSA will pay the bill,

the full bill — but nothing greater than the bill — in operating and construction costs," he says. "So it's important that our baseline cost projections are accurate. They have been independently reviewed for accuracy. If we overstep the baseline, we would be in fiscal hot water."

Don doesn't expect to exceed the baseline, because Sandia has a reputation for accurate assessments.

The project has already passed separate reviews of the conceptual design, project management, first stage of engineering design, and project cost estimate. "These steps reduce the possibility of buyer's remorse for DOE later along the construction trajectory," says Don. "That's a good thing. So when they come to us, our team never fears a question, we don't waffle, and we answer the question that was asked."

DOE's multistep funding procedure could be considered Byzantine in complexity or a careful, appropriate stewardship of the taxpayers' money. But if NNSA approves the baseline plans on schedule, Don predicts that Sandians will see the project's first building — a microfabrication facility — rise this fiscal year.

Power, communication, water, sewage, and other necessities are available from the project's already-buried utilities, completed last fiscal year.

MESA, under the overall direction of Tom Hunter, Senior VP for Information, Computation, and Engineering Science (9000), is expected to renovate Sandia's scientific equipment base, provide improved simulation and component fabrication capabilities for the nation's nuclear deterrent, as well as facilitate interactions among researchers at Sandia, universities, and industry. — *Neal Singer*

Numotech

(Continued from page 1)

burn up, or oxidize, organisms on the skin or in wounds, in addition to helping flesh itself heal.

The official acceptance, called a World Wide Federal Supply Schedule contract, opens a huge guaranteed market for the product, called the Numobag™ after its creator and distributor, Numotech Inc. of Northridge, Calif. The bag is currently used in hospitals in Florida and California, soon will be used at the University of New Mexico Hospital, and by early 2004 is expected to be on the market in simplified form so that it can be used by patients in the comfort of their own homes. The home model is expected to eliminate the need for freestanding oxygen tanks by extracting oxygen directly from the atmosphere.

Inexpensive sensors, safety features

The product was made commercially viable with the aid of inexpensive sensors and safety features created at Sandia by a research team led by Mark Vaughn and Keith Miller (both 15252). Sandia and Numotech each hold patents on the sensors and the Numobag, respectively, the result of their work under Sandia's cooperative research and development agreement.

Tests of the bag have produced clinical evidence that the technique acts to minimize scarring and shorten treatment times for skin wounds. These include pressure ulcers, diabetic foot ulcers, severe burns, and plastic surgery. The mobile, low-cost technique is of further interest to the military because its oxidizing effects are considered an effective treatment for smallpox and dermal anthrax.

"In other words," says Ray Shaum (15201), a senior administrator at Sandia, "the same characteristics that make Topical Hyperbaric Oxygen Therapy (THOT) an effective treatment regimen for diabetes-related necrotizing fasciitis make it effective for treating biological warfare-related lesions."

According to Dr. Robert Felton, founder, CEO, and president of Numotech, "We're capable of responding to the government for their needs for armed conflicts with a production of 50,000 bags a month."

The relatively new medical tool offers an inexpensive alternative to the solid, room-like constructions found in some hospitals. These similarly administer oxygen at higher concentration levels than ordinary air normally provides to stimulate wound healing. Such facilities are expensive to build, with capital costs of approximately \$1 million, and are costly to maintain. They require extensive cleaning after each use, and require total immersion of the patient in the oxygen-enriched chamber. Costs for an oxygen treatment in such facilities can reach \$1,500, while the Numobag's estimated cost per treatment is \$185, according to figures provided by MR Beal Inc., a New York-based investment house providing backing for the venture.

THOT is applied directly (and only) over the injured part, leaving the patient free to interact



A PATIENT being treated with the Numobag during clinical trials of the technology, which uses Topical Hyperbaric Oxygen Therapy to facilitate healing and reduce infection.

with his or her ordinary environment. In extreme cases, the tool could be used as a personal, inexpensive, and disposable isolation ward for the person being treated.

Says Mark, "The big thing is its ease of use. We developed helpful technology for making the bag more useful with our inexpensive, miniaturized pressure sensors. Now, with the official designation that this is a viable therapy, the Veterans Administration, Medicare-Medicaid, the Navy, the Army, the Air Force can say, 'We want to put these on our boats or whatever, and we can buy a bunch of them.'"

Persistence pays off

Says Sandia tech transfer expert Gordon Leifeste (1321), "What Numotech achieved with its persistence is very important. Programs like Medicare are heavily regulatory-driven. Now the device has a worldwide federal contract. That's effectively a GSA (General Services Administration) number, which is hard to come by. It's important because you might think you've invented a better mousetrap but you might not be able to sell it because you're constrained by the federal regulatory environment: the federal agencies haven't given you a number. Now this device is one of the relatively few that physicians can choose from that have won government approval."

Says Ray, "The DLA [Defense Logistics Agency] places blanket contracts that anyone in the government (e.g. Sandia, FEMA, VA, DoD) can utilize. They are similar to our JIT contracts in that pricing is already established, and buyers do not need to justify the selection. The benefit to Numotech is dual: 1) anyone in a government agency can now buy the Numobag without having to justify the purchase as a competitive acquisition; and 2) GSA exhaustively checked out the medical efficacy claims of THOT. Award of a contract validates claims that might otherwise be seen as marketing hype."

The bags, produced in California, are of extruded polyethylene.

"Each is cleaned to specifications equivalent to a class 1000 cleanroom," says Felton, "and the product does not outgas when used." The problem of outgassing, a potentially serious drawback, was overcome by researchers, as was the problem

of bonding the throwaway pressure gauge to polyethylene, a substance that sheds adhesives. David Zamora (14172) pointed the way on adhesive selection.

"The sensors are simple but not easy," says Mark.

The external pressure gauge developed by Mark and Keith tests the tension of the Numobag wall, rather than puncturing it to directly test gas pressure. Because the Sandia researchers knew that the tension of the polyethylene surface was proportional to the internal pressure of the gas, they could create a simple system that showed whether gas pressure was high, low, or just right. With this simple indicator, the pressure could be regulated by healthcare providers, a.k.a. nurses.

Next up: a colorimeter

Sandia expects to work further to produce a colorimeter that will assess the progress of wound healing, as well as a cheap device to measure the quality of wound outgassing. The device would be similar to those used to detect changes in stored nuclear weapons, says Mark.

The idea of the Numobag and its first tests were achieved by Madalene Heng, chief of dermatology at the VA center at Sepulveda, Calif., and professor at the University of California School of Medicine. Heng has conducted, published, and presented extensive research on wound care. While the method proved effective, it relied on her skilled presence to instruct nurses on the conditions necessary in each bag. Sensors created by Sandia are expected to do that job, permitting less skilled personnel in widely scattered geographic areas to use the healing device.

Dr. Glen Heywood, a professor of surgery at the Health Sciences Center at the University of New Mexico, says that he is "gearing up to try the Numobag for the most serious wound infections we deal with as surgeons — necrotizing fasciitis. There have been studies — some conflicting — but the studies seem to support that topical hyperbaric oxygen therapy may be helpful. We have in New Mexico one of the highest amounts of necrotizing fasciitis, maybe because our oxygen content is lower because of our higher altitude. We are the clinical institution in closest proximity to Sandia . . . where a significant portion of the engineering research has been done. Most of the clinicians are located in California. So it seemed appropriate for us to be a test site for the technique. Our aim is to achieve an objective randomized evaluation; it's important that we clearly compare the efficacy of the Numobag with other techniques to find which wounds this technique operates on most effectively."

The Numobag is the third project the company has undertaken with Sandia. The others are a wheelchair seat and wheelchair back. Each uses inflatable air pockets with miniaturized controls and pumps to reduce the possibility of pressure sores for quadriplegic and diabetic patients. Pressure sores are open, chronic lesions that are difficult to heal and can lead to amputation or even death.

For further information on this project, see the earlier *Lab News* story at www.sandia.gov/LabNews/LN06-19-98/oxygen_story.html.

Fighting the war

Antiterrorism conference attracts



ANTITERRORISM conference attendees at Isleta Pueblo discuss strategies for dealing with terrorist-instigated public safety emergencies.

A large, electronically driven bingo card hung from one wall of the Isleta Pueblo's Conference Center, and each participant in the Anti-Terrorism Training Conference, held there in late September, received a pack of "casino quality club special playing cards." But the mood was more Dirty Harry ("feel lucky, punk?") than "let's party" as 453 public safety personnel from the villages, towns, pueblos, cities, air bases, and state government of New Mexico received a week's worth of instruction in how to respond to terrorist attacks from experts who included many Sandians.

The idea for the meeting had originated simply with the idea of a small counterterrorism training session for local police groups. But it grew rapidly as law enforcement officers around the state heard of the event and asked if they could attend, says Gil Baca Jr. (3131), who was assisted by Steve Rivera (3114) and Gil's son, Gil Baca III, of the Isleta Police Department, who also served as master of ceremonies. Sponsors of the meeting were Sandia, Isleta, the University of New Mexico, and the US Department of Justice.

The conference tone was set by guitarist Hector Pimentel. His understated rendition of "God Bless America" was accompanied by a slide show not of waving fields of grain but of tall buildings bursting into flames, columns of rising smoke, stretches of fallen rubble, downward drifting white particles blanketing streets and people, a disheveled woman crying as she speaks on a cell phone, and a line of American refugees on foot, stepping from a metal bridge onto presumably safe soil with a great gray cloud of smoke filling the air behind them. The sign on the bridge facing the viewer reads, "Welcome to Manhattan."

Megan White, who created the slide show, is a student at UNM.

Opening the conference, Al West (3100) said that 9/11, like the death of President Kennedy and the Challenger explosion, was "burned into my brain

The country's response to 9/11 "will be this generation's defining moment, as our parents and grandparents sacrificed in Vietnam, Korea, and World War Two. We can no longer take our freedoms for granted."

cells."

Sandia speakers listed included Paul Robinson, Gerry Yonas, Dick Burcham (keynote speaker), T.J. Allard, Gordon Smith, Reggie Tibbets, Al Zelicoff, Chris Cherry, Jeff Bobbe, Brian Thomson, Charlie Guinn, and Art Tucker. Other speakers were from the Bernalillo County Sheriff's Dept., Intel international corporate security, Los Alamos National Lab, the New Mexico Environment Department, US Customs Office, and the FBI.

The mostly New Mexican public safety audience — many from rural locales — listened intently to talks that before 9/11 would have seemed coming from a different universe.

Commented Don Keither, a sergeant in the Albuquerque Police Department, "We ordinarily don't get exposed to this level of knowledge. Some of it was over our heads but all of it was good to know."

David Iglesias, US Attorney for the Department of Justice, New Mexico District, told the lawmen that the country's response to 9/11 "will be this generation's defining moment, as our parents and grandparents sacrificed in Vietnam, Korea, and World War Two. We can no longer take our freedoms for granted."

Sandia President Paul Robinson spoke on the second day of the meeting. He described the remarkable number of Sandia inventions in use or soon to be in use that could aid police in stopping terrorists. Among those he named was the Sandia chem/bio foam, already used on the East Coast against anthrax; the air-



on terrorism

large law enforcement turnout



SOME OF THE MORE THAN 400 attendees to the Sandia-sponsored antiterrorism conference at Isleta Pueblo brace for the explosion of a briefcase-sized bomb (below). The blast created a powerful shockwave and a fireball the size of a two-story house.

“This war will go on for our lifetimes and our children’s lifetimes. It will make the War of the Roses look brief.”

port “sniffer” (already in use at some Canadian government buildings and airports) for detecting fine traces of explosives, and its spin-off MicroHound™ which can be hand-carried by an investigator; active electronic “agents” for use against computer threats (“a passive defense will never suffice”), and nuclear materials detectors. Speaking about terrorism, he said, “You must not wait until the battle is in your territory. You must take the battle to their territory.”

To help do this and achieve better internal security, Sandia VP Gerry Yonas (Principal Scientist and head of Sandia’s Advanced Concepts Group, 16000) discussed a future of cheap sensors available by the millions to provide better intelligence, “harden” borders, and protect sensitive facilities. Contrasting the difficulty of fighting terrorism to society’s current competence at fighting fire, he said that “with enough analysis, preparation, training, and technology we can replace the terror with acceptable preventive actions as we did with fire.”

Keynote speaker Dick Burcham (2133), in an overview, prophesized that “this war will go on for our lifetimes and our children’s lifetimes. It will make the War of the Roses look brief,” he said of the 45-year European war. All the tenets of the Vietnam War “will be brought to bear against us — adversaries who disappear into their own groups, unimaginable violence, and extreme patience.” The warriors of today, he said, “don’t wear IDs.” He said there are 560 terrorist groups in the US alone linked by communications and, to some degree, a common outlook. “Over-reactions are what the adversary desires, and to some degree, he’s succeeded. We’ve curtailed our freedoms.”

The objective of such groups is to weaken the United States by disrupting its economy, reducing its affluence and influence, and destroying the faith of its citizens in their elected government, Dick said.

“Our strength is in our wealth,” he said, but because capitalism dictates centralization and nonredundancy, technology is “the greatest strength of the industrialized world and its greatest vulnerability.” Single-species crops, while financially profitable, are more easily attacked, and airplanes, trucks, and computers — generally thought of as instruments of wealth — are also available as weapons of destruction. So, he said, are almost every other invention.

Al Zelicoff (5320) discussed different biological attacks — some successful, some not — perpetrated in the past, and the difficulty using the standards of bio-

Article by Neal Singer
Photos by Randy Montoya

logical weapons conventions for controlling access to materials that could be used for nefarious purposes: “It’s the intent of the material, not the presence of it, which may be for positive purposes, that’s considered.” Thus, a hostile state legally may maintain supplies of potentially hostile materials, claiming their use is for well-established medicinal uses.

Chris Cherry (5932) discussed the psychology of bombers (“physically and psychologically distant”), the availability of information about making bombs on the Internet (“over 60,000 entries”), and the lethal characteristics of a terrorist blast (thermal, pressure, and fragmentation).

According to Asiskovich Shalom, a former Israeli security officer now working for Intel Corporate Security, while Israeli public places are very difficult to defend against suicide bombers, the country “puts a lot of energy into protecting critical assets — water, electricity, airlines. There, the score is suicide bombers, zero.”

This is achieved by an inner security ring of shelters, card readers, closed-circuit TV, emergency communications equipment, and restricted areas; a middle ring of barriers in front of lobbies, secure doors, lobby security officers, restricted access, and full inspection. An outer ring uses an intrusion alarm system, closed-circuit TV, eight-foot fencing, lighting, armed roving patrols, and gates with access control.

Israeli construction laws mandate that every residence and workplace building be constructed with protected areas that provide immediate shelter against conventional and chemical warfare.

“We learn we have to work as one community to protect ourselves,” he said.

Ed Lente, general manager of Isleta Casino, offered an insight into the pueblo’s reaction on 9/11: Learning that many planes were stacking to land at the Albuquerque Sunport and not knowing whether further buildings were targeted by terrorists, management evacuated the casino — one of the most prominent buildings in the area — to protect 1,400 employees and 4,000 guests.

The governor of Isleta, Alvino Lucero, urged participants “to train daily, because there are groups training daily to do what they [the terrorists] do.”

Everyone deserves dignity without judgment

ECP campaign begins: Sandia employees set to maintain status as community's most generous givers

By Iris Aboytes

How does a person acquire the concept of trying to help people? One way, as in this case, is through examples. "My father had no money, but he always found a way to help people, friends, and neighbors," says Lenny

Lenny Martinez, VP 14000. "My father, Amadeo Martinez, through his example instilled in me a conscious desire for helping people."

Lenny says his father would furnish food and clothing or spend time listening and talking to people who were lonely and desperate. He understood that sometimes people fell on hard times and deserved dignity. Without judgment and without drawing any attention to himself, he helped in a quiet way, always earning trust. No pay-backs were ever expected; none were necessary.

Amadeo passed a sense of community on to his family. It is visibly easy to see the people at the top. The downtrodden — they are not



quite so easy to see.

"One of my first involvements was with Special Olympics," says Lenny. "We were privileged, as they let us enter their world of pure emotion, trust, and honest competition. Their world has no judgment on competition

"I am proud to give. We all have the opportunity to look deep inside ourselves; it is there that we find guidance. It is there we find something that tells us what to do. It is in the inherent goodness within each of us that we find ways to give."

Lenny Martinez

day, only joy.

"In Mexico my wife, Kindy, and I helped build an old-folks home. It took us 18 months to get the beds, but in the end we built a home where folks with no family or resources could pass through their final phases of life in dignity.

"Today, Kindy leads my family's participation with Heal the Children, a program where children from Third World nations are brought here for technical medical procedures and recovery in local hospitals, and this is very fulfilling



and rewarding. Sometimes the child's stay is prolonged and we become even more attached. But it is very comforting when the children go back to their parents healthier and physically ready for the growing-up part of their lives."

Says Lenny, "One of the finest characteristics a person can have is being technically capable, with a heart — he/she can bridge the gap the other way — always discovering, improving, making things better, putting *corazon* [heart] into it. Giving from the heart lasts forever."

"I am proud to give," says Lenny. "We all have the opportunity to look deep inside ourselves; it is there that we find guidance. It is there we find something that tells us what to do. It is in the inherent goodness within each of us that we find ways to give."

"The United Way of Central New Mexico, through our ECP Program, helps others much better than I do, I just talk about it," says Lenny. "Why do I do it? It has become a way of life.

"By the way, if you are ever in Pagosa Springs and are hungry, knock on the door of Amadeo and Eva Martinez's house. Amadeo will open the door and welcome you, and Eva will probably feed you."

United Way launches Technical Assistance Fund

United Way of Central New Mexico is launching a Technical Assistance Fund next year that will provide computer equipment to health and human service agencies in Bernalillo, Sandoval, Tarrant, and Valencia counties. The Corporate Cornerstone Technical Assistance Fund (CCTAF) is a component of United Way's Corporate Cornerstone program. It will be funded for the first time beginning July 1, 2003, with an initial grant of approximately \$50,000.

The purpose of the CCTAF is to enhance the technical capacity of any eligible 501(c)3 health and human service agency in UWCNM's service area. The Technical Assis-

tance Fund will be funded through monies designated to UWCNM's Corporate Cornerstone program.

A Technical Assistance Fund team of information technology volunteers is currently being recruited. The volunteers will visit one or two agencies, complete a technology audit and make recommendations on equipment needs. The team will then prioritize the requests and make funding recommendations. If you are interested in volunteering or would like additional information, contact Randy Woodcock at United Way, (505) 247-3671, or e-mail him at randy-uwcnm.org.

Read more about Sandia's 2002 ECP campaign on the next page. This year's campaign runs Oct. 21-Nov. 8.

Homeless children are a priority for United Way

One of the goals of donors — to help children and families succeed — is addressed by a new Title 1 agency run by Albuquerque Public Schools.

The needs of homeless children are overwhelming. Through this program APS provides homeless children with school-based services to increase their chances for school success. Components of this project are a full-year preschool, an academic summer tutorial program, and an after-school tutoring/enrichment class.

The tutoring program is staffed with licensed teachers and educational assistants. The students are eager for new experiences and success both in and out of the school setting.

Although many homeless students need remedial support in academic areas, they also need the opportunity to enrich their learning in both the depth and breadth of their knowledge and their ability to apply it.

Some of the objectives of the program are to provide:

- students with quality reading materials that are age- and skill-level appropriate.
- students with school supplies to increase self-esteem and academic achievement.
- small group settings for literacy development and assessment.
- transportation to homeless students who would otherwise be unable to attend this program.

The program is designed to enable the homeless students to attend the same school every day. This environment has given students the opportunity to be at the same level as their peers.

Labs employees take their sons to work



GOOD TO GO — Max Van Benthem, son of Mark Van Benthem (1812, not seen), gets custom-fitted for protective clothing during a demonstration at Hardin Field as part of the Oct. 10 Take Our Sons to Work Day activities. The annual event — cancelled last year in the wake of the 9/11 terrorist activities and subsequent heightened security on Kirtland Air Force Base, featured a wide range of displays and presentations highlighting Sandia's work. (Photo by Bill Doty)

For the children: Changing bad numbers, giving a hand

By Iris Aboytes

We have all at one time or another read that eyes are the windows to the soul. How is it possible little children's eyes so bright can reveal trouble, fear, and hurt? Children's eyes should be full of only joy, love, and laughter.

A tour of three United Way Agencies allowed us to enter three different worlds. All Faiths Receiving Home, Martineztown House of Neighborly Service, and Cuidando los Ninos all have children as primary benefactors.

All Faiths Receiving Home

All Faiths Receiving Home was founded in 1956 by a group of women from varied background and religions who saw a need for an emergency shelter for nondelinquent children. It is central New Mexico's preeminent multiservice, non-profit agency serving abused and neglected children and their families. It is a comprehensive child abuse prevention, intervention, and treatment agency, serving more than 1,500 children, ages 12 and under, and their adult caregivers each year.

All Faiths Children's Advocacy Center — The Children's Safehouse — uses a child-friendly environment and specially trained interviewers to facilitate investigations of allegations of sexual or severe physical abuse. The Safehouse provides the "hub" for coordinated work among law enforcement, social services, medical, advocacy, and treatment personnel.

Five-year-old Anita did not like anyone touching her. She would not like her hair brushed. Interacting with other people was out of the question. Today, that little girl is described by her adoptive parents as having lots of friends — a regular little girl. She should not have had to work so hard just to be a regular little girl.

Martineztown House of Neighborly Services

Martineztown House of Neighborly Services provides a broad-based community service supporting families in the Martineztown/Santa Barbara neighborhoods. A quality, affordable, bilingual year-round before/after school program provides a nurturing educational environment for school children. After-school tutoring is furnished so children can be on the same level as their peers.

Through their Bookstart program children are exposed to the wonderful world of books. In a caring, nurturing, and safe learning environment, books, books, and more books are the words for yesterday, today, and tomorrow. Parents are required to volunteer to help in any way they can for at least 20 hours per session.

The Martineztown Cooperative organized itself in 2000 to augment its income by offering cooking, cleaning, and crafting talents to the



PARTICIPANTS in the Homeless Literacy Project, a United Way agency, board the bus to go to school.

public. The Martineztown House of Neighborly Services supports the organizing efforts by providing technical assistance through the Family & Community Services Program.

Parents are counseled on ways of preparing themselves so that they can provide for their family. Together they formulate a plan and expectations for success. "We give a 'hand up' not a 'hand out,'" says Eugenia Cabiedes, executive director.

Cuidando Los Ninos

Cuidando Los Ninos provides child care and

preschool for homeless children. Its nationally accredited program serves as a model for three other Homeless Service Programs nationwide. Cuidando approaches the idea of strengthening families by working with both child and parent to foster healthy, self-sufficient life styles.

Homeless children are welcomed into an environment of nurturing, learning, and consistency. At the on-site clinic, a nurse practitioner administers wellness exams to the children. Their progress is evaluated once a month.

Cuidando works with parents who are struggling to survive. It works with them toward self sufficiency by improving their life skills through adult education classes. Parents are set up to win.

Child abuse, homelessness, and poverty are all words, and that is what they should be — just words. They seem much tamer and easier to handle reading them in the paper or hearing them on newscasts. Seeing them with your own eyes is a shocker. There are many scared souls in those tiny little bodies.

The numbers just don't seem to be right: 1,500 children and parents referred to All Faiths Receiving Home, 200 homeless children and parents at Cuidando, all in a year.

What can we do to change the numbers? Do you know? Maybe by just doing what Eugenia Cabiedes, says and "giving a hand up."

How funding to agencies is managed by United Way

What do you have to do to become a United Way Agency? This year UW allowed any area 501c (3) agency to compete for community fund donations.

A Research & Polling Inc. survey in May 2001 found that contributors had three top issues: to help those in need by improving health and wellness; to increase self-sufficiency; and to help children and families succeed.

For many years, the UW had 43 member agencies, with few opportunities for other agencies to join. Under the new guidelines, 19 new organizations have been funded for the first time by United Way of Central New Mexico. For a complete list of agencies go to www.uwcnm.org and look under "Where the money goes."

Jack Holmes, CEO says, "We are a United Way that is on the forefront of changing how donor dollars are distributed. Other UWs in the country look to us for guidance."

Agencies requesting funds are required to submit proposals and go before a committee composed of people representing the donors. There were 250-plus volunteers representing employee

groups, all ethnic groups, and all four counties, divided into 18 panels.

The agencies turned in a written Request for Proposal, made a presentation to the panel, and then the volunteers conducted an on-site visit. There was a certified public accountant on each panel. The volunteers then voted on the allocation amount.

Founded in 1998, the Corporate Cornerstone program allows companies to donate cash or in-kind donations to pay the United Way's administrative expenses. It allows 100 percent of an individual's contribution to go to the people who need it most. A money-back guarantee gives community fund donors a refund if they are unsatisfied with the way their money is being spent.

"We as a UW have been focusing on customer service. The corporate cornerstone program and the money back guarantee, the formal survey, and the open application process are examples of that," says Jack.

United Way of Central New Mexico includes the counties of Bernalillo, Sandoval, Valencia, and Tarrant. — Iris Aboytes

Weapon Intern Program class of 2002 graduates



HONOR TO THE GRADUATES — The Oct. 4 *Lab News* had a brief item about graduation day for the 2002 class of the Sandia-sponsored Weapon Intern Program, but did not show pictures of all the graduates. Here they are with some of the dignitaries attending the ceremony. They are, front row from left, Karen Boardman (DOE/AL), Nazir Khalil (DOE/AL), Eden Eager (Sandia), Lori Maestas (Sandia), Maj. Joe Oder (USAF), and Maria Walsh (Sandia). In the middle row are Brig. Gen. Haeckel (NNSA), Brig Gen. Smolen (HQ USAF/XON), Stan Atcity (Sandia), Merlin Decker (Sandia), Kimberly Haulenbeek (Sandia), and Don Susan (Sandia). In the back row are Robert Repine (KCP), Maj. Scott Jacobs (USAF), Dan Sherman (Sandia), Art Shanks (Sandia), John Sichler (Sandia), and Joan Woodard (Sandia). Not pictured is Maj. Tony Sukla (Sandia). The brief article in the Oct. 4 issue also misidentified Ben Benjamin, senior mentor, as Bob Benjamin.

Mileposts

New Mexico photos by Iris Aboytes
California photos by Bud Pelletier



Kathie Hiebert-Dodd
25 6545



Gary Mueller
20 14404



Gwendolyn Pirtle
20 9327



Gary Shamber
20 8512



Ruth Bitsui
15 12111



Edward Hoffman
15 8114



Darlene Romanelli
15 12322



Delmar Klinetobe
35 2995



Larry Navarro
20 8514



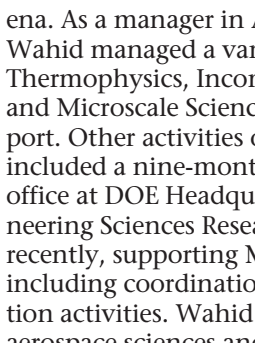
STEVE ROHRIG

ventional munitions, robotics, and instrumentation areas. He has a BS and an MS in physics.



CHUCK MEYERS

Wahid Hermina, from Manager, Microscale Science and Technology Dept. 9113, to Level II Manager, Nuclear Weapons Program Integration and Studies Center 9800. Wahid has been associated with engineering sciences organizations at Sandia, both in California and New Mexico since joining the Labs in 1982. His focus has been on research, development, and analysis of thermal-fluid dominated phenomena.



WAHID HERMINA

As a manager in Albuquerque since 1989, Wahid managed a variety of departments including Thermophysics, Incompressible Fluid Mechanics, and Microscale Science and Non-Continuum Transport. Other activities over the last few years included a nine-month assignment at the ASCI office at DOE Headquarters, managing the Engineering Sciences Research Foundation and, most recently, supporting MESA/microsystems at Sandia, including coordination of modeling and simulation activities. Wahid has a BS in mechanical and aerospace sciences and engineering physics from



Rudolfo Sanchez
15 108445

Recent Retirees



L. Kent Christensen
24 10305



Grant Claycomb
26 9511



Albert Hodapp
33 15425



Sue Hansen
14 6214



L. Patrick Murphy
35 10854

Management promotions

New Mexico

Steve Roehrig, from Level II Manager, DOE Security/OFA/NFE Dept. 5840, to Director, Intelligent Systems and Robotics Center 15200. Steve has spent most of his Sandia career in systems engineering and program management since he joined the Labs in 1976.

Princeton University, an MS in mechanical engineering from Stanford University, and a PhD in mechanical engineering with a minor in physics from Stanford University.

Ron Seylar, from PMTS, ES&H Customer Support Teams Dept. 3129, to Manager, Hot Cells and Gamma Facilities Dept. 6432. Ron's work at Sandia has been in nuclear engineering and health physics since he joined the Labs in 1993. He has an MS in nuclear engineering from the Air Force Institute of Technology, an MS in management from Boston University, and is a Certified Health Physicist and a Professional Engineer.

California

Jerry Friesen, from PMTS, Distributed Visualization & Data Service Dept. 8990, to Manager, Distributed Visualization & Data Service Dept. 8990. Jerry joined Sandia in July 1987. He was project lead for the design and implementation of the Visualization Design Center, and worked on building simulations for homeland defense applications and creating animations of mechanical assemblies. Jerry has a BS in electrical engineering and an MS in computer science, both from the University of California/Davis.

Paul Spence, from PMTS, Chemical and Materials Process Modeling Dept. 8728, to Manager, Engineering Mechanics Modeling and Simulation Dept. 8727. Paul joined Sandia in February 1990. His work has been in thermo-structural analysis of mechanical systems. Paul has a BS in mechanical engineering from the University of California, Santa Barbara, and an MS in mechanical engineering from the University of Washington.

More promotions (August, September) coming in next issues.

Tax savings can be easy with Reimbursement Spending Accounts for health care or day care

And now a new debit card for the Health Care RSA makes it even easier

Would you like an easy way to save on your tax bill? The Reimbursement Spending Account (RSA) is a Sandia benefit that allows you to set aside money on a pre-tax basis through payroll deductions.

If you enroll in the Health Care RSA (HCRSA), that money may be used to pay for eligible out-of-pocket health care expenses for you and your eligible dependents. Out-of-pocket health care expenses include doctor or prescription drug copays; medical or dental deductibles; amounts over the dental Type B Schedule coverage; or expenses for additional eye exams, extra pair of prescription glasses or prescription contact lenses. If you enroll in the Day Care RSA (DCRSA), that money may be used to pay for eligible expenses for your eligible dependents. With the DCRSA you are reimbursed for expenses you incur to have your child (under age 13), or other eligible dependent, taken care of while you are at work. The caregiver may be a licensed day care center, a relative that you don't claim as an exemption on your federal income tax return, or your child who is at least age 19. Your election amount reduces your reportable income for the purpose of federal, Social Security (FICA), and, in most cases, state taxes.

If you are a regular employee, a limited term employee, a postdoctoral employee, or a full-time, year-round faculty sabbatical employee, you may enroll in the RSA during this year's Open Enrollment period Oct. 20 through Nov. 9 for the 2003 plan year. If you are interested in participating in the RSA Plan in 2003, you must enroll during the open enrollment period. You may change your annual election amount or cancel your enrollment in the 2003 plan year anytime prior to midnight on Dec. 31, 2002.

Your annual election in the HCRSA can be any whole dollar amount from \$100 to a maximum of \$4,000 per employee. The annual election amount is divided by 25 pay periods (example: \$100 divided by 25 equals \$4) and this amount is taken out of each of 25 paychecks throughout the year. (There is no deduction from the first paycheck in the year.) Your total HCRSA annual election amount is available for your use

at the beginning of the 2003 plan year. You should be conservative in determining your annual election amount because any amount remaining in your HCRSA at the end of the plan year must be forfeited per IRS rules.

Everyone who enrolls in the Health Care RSA for Plan year 2003 will be receiving a debit ("mbi Flex Convenience®") card. That debit card may be used to pay for eligible health care expenses that are incurred for services rendered during the 2003 plan year and that are either not reimbursed or only partially reimbursed by any medical, dental, or vision care plan, or other health insurance plan. Use of the debit card is not mandatory. The Flex Convenience® debit card is authorized for use at health care locations offering qualified products and services and that accept MasterCard®. All HCRSA participants must retain all receipts from Flex Convenience® debit card transactions. PayFlex Systems will be auditing the Flex Convenience® debit card transactions and will be requesting receipts. Failure to provide the requested information to PayFlex Systems will result in loss of debit card privileges and the possibility that the expense will be deemed ineligible and that you will be required to repay the amount to the Plan. Please read carefully the "Employee Enrollment Agreement and Funds Transfer Disclosure Statement" that will accompany your "mbi Flex Convenience®" card. The Agreement describes how to use your Flex Convenience® debit card; your responsibilities when using your Flex Convenience® debit card; and the immediate notification requirement for lost or stolen cards as well as reporting unauthorized usage or errors on your statement to PayFlex Systems. Lost cards can be reported on www.theflexcard.com. Please refer to the RSA Summary Plan Description on Sandia's internal web under the Benefits Home Page for more information on eligible expenses, as certain expenses are not reimbursable. Reimbursable expenses must be for you or for dependents you claim as exemptions on your tax return.

Your annual election in the DCRSA can be any whole dollar amount from \$100 to a possible maximum of \$5,000 (per family per calendar

year). The \$5,000 maximum is available to single employees or to married employees filing joint federal tax returns. Married employees who file separate federal tax returns are limited to an annual maximum of \$2,500. In either case, your election cannot exceed your or your spouse's earned income. (See the web page for more detail.) PayFlex Systems will be at our Open Enrollment meetings on Oct. 15 and Oct. 22 in New Mexico and on Oct. 29 in California. Instructions for enrolling in RSA are available in your Open Enrollment booklet. Sandia's RSA Summary Plan Description can be found at <http://www-irn.sandia.gov/hr/policies/benefits/health/rsa/rsaletter.htm>. The booklet and SPD include information on mid-year RSA changes that are allowed only in special circumstances.

Example of potential tax savings based on the 2001 tax rate for a Single Head of Household:

	W/O RSA	With RSA
Annual salary	\$50,000	\$50,000
Less HCRSA	\$ 0	\$ (500)
Less DCRSA	\$ 0	\$ (4,000)
Annual taxable income	\$50,000	\$45,500
Less FICA tax	\$(3,825)	\$(3,481)
Less federal tax	\$(9,226)	\$(7,988)
Income after taxes	\$36,963	\$34,031
Potential tax savings		\$1,582
Income after taxes	\$36,963	\$34,031
Less health care expenses	\$ (500)	\$ (0)
Less day care expenses	\$(4,000)	\$ (0)
Spendable income	\$32,463	\$34,031

Note: This is an over-simplified example. It omits exemptions and deductions. It does not take into consideration the federal tax credit available for day care. Each participant will have a different savings result depending on that participant's tax bracket, filing status, etc. To be certain you use the method that gives you the most tax savings, you should consult a tax advisor.

Gas balloons grace Albuquerque sunset



QUINTESSENTIAL OCTOBER SKY — For more than a generation, Albuquerque's autumn skies have been graced by the colorful and carefree sight of hundreds of hot air balloons floating free during the Albuquerque International Balloon Fiesta. Most years, gas balloons, too, find the Fiesta an appealing venue. This year, *Lab News* photographer Randy Montoya captured this breathtaking image of gas balloons preparing for a dusk launch in the America's Challenge gas balloon race. The race was won by balloonist Richard Abruzzo and New Mexico Governor (and adventurer) Gary Johnson, who flew their balloon 1,738 miles, landing in Delaware.

Community Speakers Series
*Community experts addressing
 your issues, your concerns,
 your community*

Vision for APS

**Come meet the Executive Team for
 Albuquerque Public Schools (APS)**

Speakers:
 Dr. Beth Everitt, Chief Education Officer
 Tom Garrity, Chief Advancement Officer
 Michael Vigil, Chief Business Officer
 Joseph Vigil, Superintendent

**Thursday, October 24
 Noon-1 p.m.**

**Steve Schiff Auditorium
 Technology Transfer Center
 (Bldg. 825)**

**Question and answer period
 follows presentations
 refreshments in lobby at 11:45 a.m.**

**Presented by Community Involvement
 Contact Pam Catanach at 284-5211 or
pcatana@sandia.gov for more information.**