Sandia, Lockheed Martin develop electromagnetic missile launcher for naval shipboard operations

Full-scale launch at Sandia in December praised by Navy personnel

PREPARING FOR LAUNCH — John Jojola (15335) prepares the electromagnetic missile launcher for a test in mid-December. The missile's distorted shape is due to the camera's fish-eye lens. (Photo by Randy Montoya)

By Michael Padilla

Researchers at Sandia and Lockheed Martin have created an electromagnetic missile launcher for naval applications that will tap into the abundant electric power available on ships that are now on the drawing board.

The launcher will result in less deck heating on ships, help eliminate visual and radar obscuration, and be scalable to larger missiles, says Tom Lockner (15335), Sandia's primary investigator for the project. In addition, the launcher will help reduce the infrared signature after missile launch.

The launcher is a highly efficient electromagnetic propulsion system based on pulsed power systems technology.

The project, sponsored by the Lockheed Martin Shared Vision Program, brings together Sandia expertise with electromagnetic launchers and Lockheed expertise in systems designs and engineering for naval launcher platforms.

Sandia and Lockheed Martin's Maritime Systems and Sensors (MS2) began the concept development process by building and testing a mini-model, and then designing intermediate and full-scale systems to identify potential difficulties.

"Sandia has proven expertise in magnetic

(Continued on page 4)

Researchers develop portable device that can detect disease

Technology based on lab-on-a-chip

By Chris Burroughs

Someday in the not too distant future patients may visit a doctor's office, provide a sample of saliva or blood, and know in minutes if they are prone to heart disease, gum disease, or cancer. There would be no sending samples to off-site labs for analysis and waiting days to obtain the vital information.

A hand-held medical diagnostic device being developed at Sandia promises to be this ticket to better health for millions of Americans.

"We have taken technology that we've worked on for several years — the lab-on-a-chip devices — and are adapting them for use in medical diagnostics," says Anup Singh (8321), project lead. "We've tested saliva samples from healthy patients for gum disease, and within the next few months we will begin using the diagnostic to test diseased samples."

Lab-on-a-chip technologies

Lab-on-a-chip technologies were developed in the mid-1990s for detecting biotoxins and chemical agents. In new incarnations they are used in the analysis of bodily fluids, such as saliva and blood, for detecting certain diseases. Expanding on established microchip-based separation technologies, the research team adapted a method known as an immunoassay to a chip. The combination of the lab-on-a-chip technology and the immunoassay technique allows for fast and sensitive analysis of biomarkers specific to certain diseases.

As part of the immunoassay process, antibodies specific for biomarkers of interest, such as gum or heart disease, are tagged with a fluorescent dye and then mixed with a patient's saliva or blood. Biomarkers present in the sample attach themselves to the fluorescent antibody. The mixture is injected into a microchip using a syringe. An applied electric field forces the sample to flow through a microchannel that is two to five centimeters long, tens of microns deep, and a few hundred microns wide.

As the sample moves through the channel,

(Continued on page 5)

Sandia LabNews

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Sandia National Laboratories

CLEAN ROOM'S PROUD PAPA — Willis Whitfield, escorted by Carol Sumpter (1702), stands outside one of his babies — a clean room in the Microelectronics Development Laboratory. Willis, a retired Sandia engineer, is credited with invention of the laminar flow clean room that made modern electronics possible. One purpose of his invited visit back to Sandia last Friday was to approve a statue of himself slated for the MESA defense complex. (Photo by Bill Doty)

What's what

Frances Howard (9329) e-wondered recently about the origin of the "Q" and "L" designators for our security clearance levels. An interesting question, I thought. Thousands of us wear one of those letters on our badges every day, and probably few, if any, of us know what they mean. Why "Q" and "L" instead of, say, "T" and "S" or "I" and "O" or something else.

Having not a glimmer about their origin and unable to make up anything reasonable-sounding — which probably was a good thing — I opted to ask Tami Moore in the Sandia Site Office.

Tami didn't know either, so she also passed the question along. Fortunately, her resource was a good one — Don Richer, manager of the NNSA Service Center's Personnel Security Department, who wrote back: "The Manhattan Project site was originally designated the 'Q' site and 'L' was the designation for Limited Clearance."

Now, could someone explain the "T" and "MO" building designators? The "T" can't be for "temporary" because they're certainly not (at least, most of 'em aren't), and the "MO" can't be for "mobile office" because they don't seem to be any more mobile than the stick-built buildings.

Maybe we should think of them in terms of an edition of Johnny Hart's cartoon strip B.C. from a few years back in which the characters were naming all the things around them. One held up a flower and asked something like, "What should we call this chrysanthemum?"

What should we call those "T" and "MO" buildings?

* * *

If you depend only on the mainstream media for the state of everyday affairs, it often seems that we live in a world of tragedy, suffering, gloom, and injustice. But there is good news out there, too, and Sandia figured in a couple of bits of that recently.

During the holiday season, Sandians donated more than $22,000 to the Shoes for Kids program, which provides new shoes for youngsters who might not otherwise have any. That total represents about one-third more than the program collected last year.

And in a letter to Labs Director Paul Robinson, United Blood Services noted that "in 2004, your employees donated 1,515 units of blood, which potentially can save 3,030 lives. . . . To the patients who receive blood, and to the people who love them, you and your employees are heroes."

Very nice — twice.

* * *

The research and development part of Sandia's work is always interesting, but when someone shuttles that R&D into a real-world application, it becomes even more interesting. Downright intriguing, sometimes.

And intriguing is the right description for an application of Jonathan Weiss's (1739) "light tubes" that were the subject of a Jan.7 *Lab News* story and a news release. The story got the attention of an Arizona man, who thinks the light tubes might be used to determine the alcohol content of wine.

If his idea works, would that make the product lite wine?

Hmmmm. . . maybe it's not such an intriguing idea after all.

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

Sandia LabNews

Sandia National Laboratories

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Ken Frazier, Editor 505/844-6210
Bill Murphy, Writer. 505/845-0845
Chris Burroughs, Writer. 505/844-0948
Randy Montoya, Photographer 505/844-5605
Nancy Garcia, California site contact. 925/294-2932

Contributors: Janet Carpenter (844-7841), John German (844-5199), Neal Singer (845-7078), Larry Perrine (845-8511), Howard Kercheval (columnist, 844-7842), Will Keener (844-1690), Iris Aboytes (844-2282), Michael Padilla (284-5325), Rod Geer (844-6601), Michael Lanigan (844-2297), and Michelle Fleming (Ads, Milepost photos, 844-4902). Dept. 12651 Manager: Chris Miller (844-0587).

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Nominations sought for Employee Recognition Awards for 2005

Nominations for the Labs Employee Recognition Awards are being accepted through Jan. 31. The ERA program is a way for Sandians to recognize individuals and teams whose work or contributions in support of Sandia's mission and values have been exceptional.

The ERA program recognizes excellence in four categories, three for individuals — technical excellence, exceptional service, and leadership — and one for teams.

Nomination forms with detailed instructions and category criteria are available online at http://www-irn.sandia.gov/era/05era.htm. Each division has an ERA coordinator; that contact information is also available via the link above.

Any current, regular Sandia employee may nominate individuals or teams. A separate nomination form must be submitted for each individual and team nomination. A combined total of 122 individuals and teams will receive corporate Employee Recognition Awards.

ERA individual winners and designated representatives from winning teams will be recognized at the Corporate Employee Recognition Night on June 25.

New Continuing Education course catalog to be available soon

A catalog listing all the courses offered through Sandia's Continuing Education Program will be available in the next couple of weeks. It is the first time since the early 1990s that a hard copy catalog has been compiled.

Char Wells, Level II Manager of Corporate Education, Development, and Training (CEDT), Org. 3520, says the catalog will be on the CEDT home page, https://hrprod.sandia.gov/cfdocs/prod/hris/ctd/apps/cedtweb/cedtmain/index.cfm. Some catalogues will be printed for employees on demand.

Sandia offers 500 active courses. Many are part of a new Strategic Education Initiative (*Lab News*, Sept. 17). More new technical courses are being added this year, including classes in the areas of bioscience, engineering, computer security, nuclear engineering, energy surety, and engineering sciences.

"The engineering science classes are vital for MESA [Microsystems and Engineering Science Applications]," Char says. "We recently launched two courses in this area."

This spring the Sandia Engineering Science Council is sponsoring an electronic survey to determine education and training needs in the engineering sciences. New courses will be designed based on the survey findings.

Last year Sandia recorded more than 100,000 course completions by Sandians. Char thinks more will sign up this year.

One reason for the increasing popularity of these courses may be the Strategic Education Initiative, which encourages all employees to take up to 32 hours of continuous learning.

A project/task number has been created to be used by students to cover labor charges. Course costs will be the responsibility of the individual department.

Recent Patents

James Fleming (1749) and Shawn-Yu Lin: Method to Fabricate Layered Material Compositions.

John Hachman and James J. Kelly (both 8753): Protective Shield for an Instrument Probe.

James Fleming (1749), Shawn-Yu Lin, and G. Ronald Hadley (1742): Microfabricated Bragg Wavelength.

James McElhanon, Thomas Zifer, and Leroy Whinnery (all 8762): Light Emitting Elastomer Compositions and Method of Use.

Hongting Zhao and Robert Moore (both 6874): Zirconium-Modified Materials for Selective Adsorption and Removal of Aqueous Arsenic.

John Hurtado (Texas A&M), Clark Dohrmann (9124), and Rush Robinett III (6210): Distributed Optimization System.

In more than a quarter-century in combustion science, retiring director (and ever-cordial) Bill McLean has made his mark

By Nancy Garcia

Hired 26 years ago as a Member of the Technical Staff, retiring Combustion and Physical Sciences Center 8300 Director Bill McLean will be remembered, in addition to his technical and programmatic accomplishments, for his skill working with people.

BILL McLEAN

"He was just as cordial to the custodian as to the vice president," recalls his assistant Pat Miller (8300), who is also retiring. Bill's wife, Suzanne, agreed. "Work was a place where I think he just had a large amount of respect and admiration for people he worked with at all levels. He had a wonderful way of just being very fair. He acknowledged how bright they are, how hard they work."

Raised in San Francisco and educated (from an undergraduate degree through his PhD in mechanical engineering) at the University of California, Berkeley, Bill was a Lockheed employee for a year before leaving the Palo Alto Research Laboratories for Cornell University. Attaining tenure at the School of Mechanical and Aerospace Engineering in 1978, he returned west for a sabbatical at Sandia.

"There were excellent facilities and resources and a real culture of cooperation and collaboration," he notes. Leaving academia to work permanently here, he said, he didn't have thoughts about rising in a management hierarchy. But he gradually ascended the management ranks, with increasing responsibility for research directions in combustion and energy efficiency along the way.

Speaking at Bill's retirement celebration, California Laboratory Vice President Mim John (8000) said she hadn't had much opportunity to interact with him in their early days. As their careers progressed, she said, "I came to realize what an extraordinary individual I had an opportunity to work with. We're talking about the consummate team player who puts the interests of the Labs first." Often, she said, he would bring up considerations that included what was best for the site and the Labs, and how people would be affected. "I've learned so much from you," she remarked.

FOCUS — Retiring Center 8300 Director Bill McLean talks with KGO-TV reporter Karen Sze and her cameraman. (Photo by Bud Pelletier)

Bill was attracted to Sandia shortly after the Department of Energy's predecessor agency launched a major program and user facility here. He watched the Combustion Research Facility (CRF) open its doors in 1981, and then was instrumental in getting a partially finished Phase II completed in 1999, securing the final funds to complete a project that essentially doubled the office and laboratory space.

His colleague (now retired) Bob Gallagher commented that although Bill may appear to be laid back, he had an ability to focus. "He did a tremendous job finally pulling off securing the remaining funding," said longtime colleague Don Hardesty (8360), who worked with Bill on coal combustion research when Bill first arrived. Don said Bill was a very modest and humble person who was also smart and intuitive when it came to working with the nuances of program development.

Bill was gratified that about six years after the combustion program began, it started to receive international notice. By the 1982 biennial combustion symposium in Israel, he said, "It was apparent to all that the programs here were indeed contributing broadly and at the highest quality level to combustion science." The original vision of a center of excellence in a field important to energy had been realized.

The concept of the user facility was to share lasers, which were unique and costly, with visiting researchers. The building was located outside the tech area to accommodate both US and international users. Over the years, there have been ongoing collaborations with industry scientists and university students and faculty.

The emphasis on developing optical diagnostic techniques led to a variety of programs. "Part of the power of investing in fundamental research in chemical sciences is that it leads to innovation in areas you didn't intend," Bill commented.

For instance, the idea of performing analytical chemistry at the microscale in a lab-on-a-chip came in part from work at the CRF. That led to creation of µChemLab, the culmination of a challenging effort driven on the strategic end by upper management and, as Bill eventually characterized it, "some really smart people pushing on the engineered technology end." That capability then became, to his mind, a technology and capability that opened the door to projects with the relatively new Department of Homeland Security.

Other notable projects to emerge from the CRF include Chemkin, a suite of software packages for analyzing reacting flows, which is used around the world; research into clean, efficient homogeneous-charge, compression-ignition engines (a concept — not invented by Sandia — that is potentially revolutionary); and new techniques for understanding basic chemical dynamics.

Although lasers are no longer a rare resource, the motivation for the work has not changed, Bill said. "Energy and environment remain very key drivers for the work we do here," he said. He also noted that computational approaches in both chemical and fluid mechanical aspects of combustion have advanced considerably in recent years, and CRF computational strengths and capabilities now rival the experimental capabilities.

After his retirement he intends to carry on as an emeritus director. One project would be to contribute to studies involving the state energy policy. "There is a growing recognition that energy is all about national security and our national security is all about energy," he said.

He also hopes to enjoy more sailing, music, and theater, and spend more time with his six grandchildren and possibly participate in volunteer work, too.

Keeping track of things within the lab will be interesting. "The pace of discovery is just remarkable," he said. "Measurements or computations we didn't think would ever be able to be done are now being done routinely."

Sandia California News

Recent Retirees

Ron Jacobson
40 6211

David Johnson
27 15335

Linda Vigil-Lopez
20 3550

Rich Pryor
15 9216

Chuck Loeber
10 2911

Missile

(Continued from page 1)

launcher technology, including the design and construction of coilguns and other electromagnetic acceleration devices," Tom says.

MS2 is responsible for a naval vertical launch system currently in use, and that expertise is used to design the EM system that will meet the needs of the US Navy.

Les Basak is principal investigator for Lockheed Martin.

"An electromagnetic missile launcher provides significant benefits over conventional launch methods, including the reduction of host platform susceptibility and potential reduction of missile propulsion requirements," says Basak. "Our collaboration, experimentation, and testing to date have provided crucial data for establishing the electromagnetic missile launcher as a viable method to eject missiles from launch platforms."

Lockheed Martin supplied input on design parameters and mechanical engineering that guaranteed relevance of the concept to current launch systems.

Inductive launcher technology

The electromagnetic launcher concept uses basic physics principals seen in a high-school physics lab demonstration:

First take an electromagnet that is connected to a battery and switch (the motor component of the launcher), and an aluminum ring located at the edge of the electromagnet (the launcher armature).

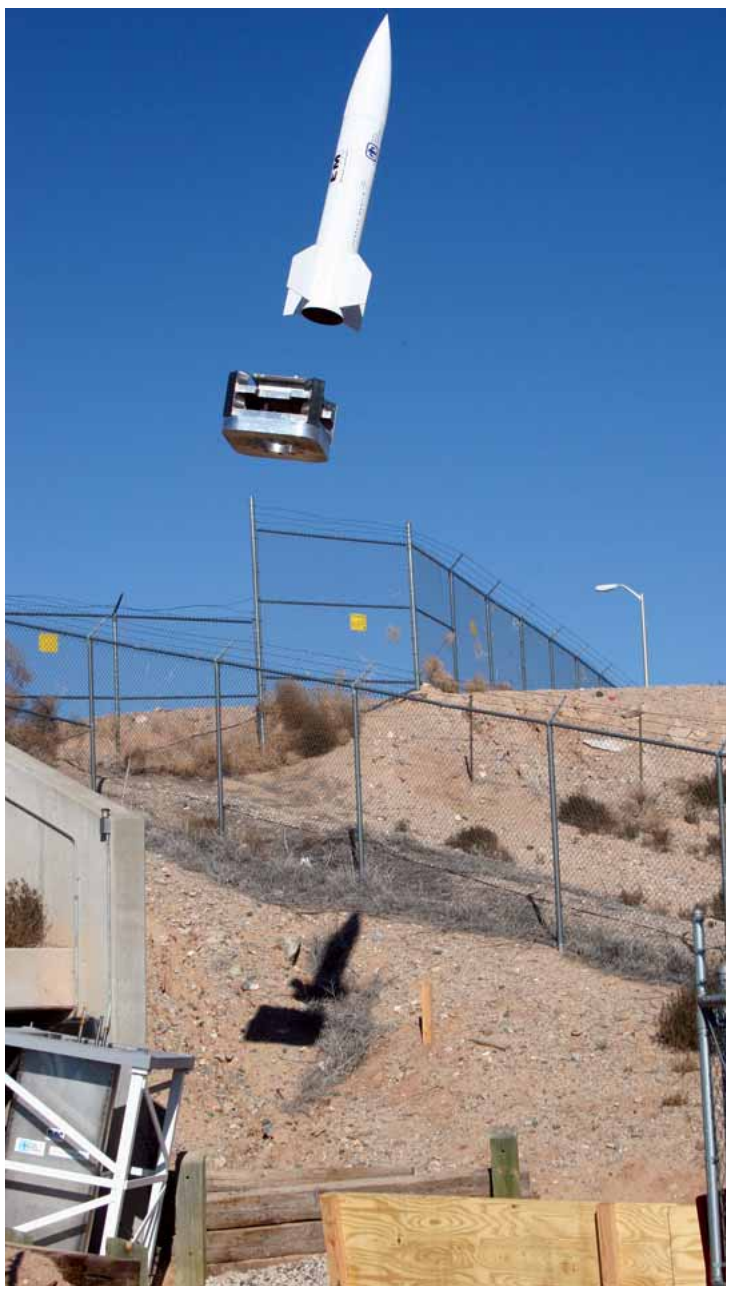
Now close the switch, pulsing the electromagnet with a fast-rising current. The rising magnetic field induces current in the armature, generating an opposing force, sending the ring (armature) flying away from the electromagnet.

This principle is repeated with multiple stages, each timed for an optimal force profile. The electromagnets are built into the launcher structure, and the armature is located on the launcher centerline.

The missile is attached to the armature, and is separated from the armature when it reaches the top of the structure.

Project concept

One objective of the project was to develop a tabletop model and technical conceptual designs for an electromagnetic launch system. Another was to design and conduct some limited experiments to better understand the electromagnetic missile launcher design and its electromagnetic interference and electromagnetic compatibility effects on missile components.



TAKE OFF — The electromagnetic missile launcher ejects a missile shape and weighted sled that simulates the missile mass and elements of the electromagnetic propulsion system.
(Photo courtesy of Greg Mann, 15335)

The tabletop model provided confirmation of simulations, as well as an effective visual demonstration of the basic magnetic launch process, in a convenient office/conference room environment.

Sandia researchers performed simulations to predict the performance of the mini-launcher demonstration model fabricated by Lockheed Martin. Researchers tested the demonstration model, analyzed the data, and compared the results with predicted performance. Based on the simulation validation gained from the mini-launcher, the project then proceeded to design and fabrication of full-scale components and launcher.

The second phase of the project was to design a full-scale demonstrator. A launcher prototype was first designed, using test coils, power systems, and a launcher structure at full-stress parameters. This task generated an intermediate system design, which could be implemented with as many available parts as possible while still testing critical design parameters.

Full-scale launch demo

Sandia and Lockheed Martin have extended the sub-scale launcher concept to a full-scale design capable of meeting the requirements for a shipboard missile launch system. The final results of two years of development was recently demonstrated to an audience of Navy, Lockheed Martin, and Sandia personnel.

On Dec. 14, the first electromagnetic missile launcher, with a full-scale mass and missile replica shape, was launched outside Bldg. 970 in Area 4.

"The demonstration met all objectives of the program and was praised by Navy and Lockheed program managers as a clear view of the future of electric-powered weaponry for the Department of Defense," says Tom.

Basak says the success of the December demonstration proved the feasibility of employing electromagnetic propulsion for missile boost and eject.

"Furthermore, we have demonstrated the successful melding of Sandia science and technology with Lockheed Martin naval weapon system integration expertise," says Basak.

The electromagnetic missile launch development work continues with a third year of Shared Vision funding, leading to transition to the Navy for full-scale weapons engineering on future electric-powered naval platforms.

Electrical safety: New ES&H Manual section coming

Section 4c makes lockout/tagout procedures easier to follow

By Chris Burroughs

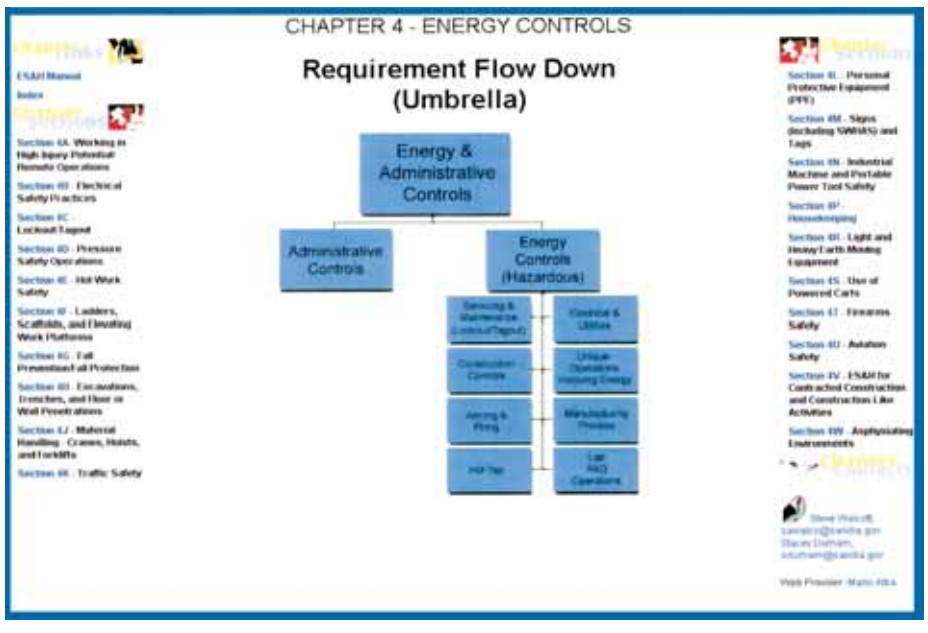
Following several accidents where Sandians or contractors received electrical shocks by not adhering to proper lockout/tagout (LOTO) procedures, a newly revised chapter section of the online Environmental, Safety, and Health (ES&H) Manual dealing with controlling hazardous energy sources will be available early next month.

Section 4c is more user friendly and technically accurate and helps the line better understand the safety requirements prior to performing maintenance work.

The change was also initiated by multiple internal assessments that identified a recurrent systemic failure of the line to follow the requirements in the ES&H Manual for equipment-specific LOTO procedures.

"We decided to hold a 'kaizen event' where people across the Labs were put in one room and couldn't come out until these problems were solved," says Kathleen McCaughey, Director of ES&H and Emergency Management Center 6300. "They determined that the old section was not clear

(Continued on next page)



THIS IS A PEEK at what the newly revised chapter section of the online ES&H Manual dealing with controlling hazardous energy sources will look like.

Kaizen comments

Comments from people participating in the kaizen event:

- "The regulations are easer to understand than the ES&H Manual."
- "I don't use the ES&H Manual. I do what it takes to be safe."
- "Because of the way Sandia has addressed assessment/audit findings, the ES&H Manual has become a patchwork of regulatory interpretations that have complicated the regs instead of clarifying them, and Sandia has added additional requirements that are not in the regs."

Comment from kaizen coordinator: "Have never been in an event where so many of the participants had their own copies of the regs, referred to the regs throughout the event, and did not use or refer to the ES&H Manual."

Medical device

(Continued from page 1)

cast-in-place porous polymers in the microchannel sort molecules based on their size and electrical charge. If biomarkers for the disease are present in the patient's sample, the lab-on-a-chip analysis will separate fluorescent antibodies bound to the biomarker from unbound antibodies.

A photomultiplier tube then detects the fluorescence emission with extreme sensitivity. After quantifying the relative fluorescence of the two species — bound and unbound antibodies — researchers can determine the amount of biomarker present in the patient's sample. If the sample contains significant fluorescence emission from a bound antibody, indicating that biomarkers are present above a certain level, a doctor could conclude that the patient has or will eventually get the disease for which he/she is being tested. At the conclusion of the test, still in the doctor's office, preventive or therapeutic care could begin.

Five-pound package

The entire device, including the channeled glass chips, photomultiplier, and electronics, will fit into a hand-held package that weighs less than five pounds.

"The beauty of this device is that it has everything required to make it useful — sensitivity, portability, and the ability to run tests quickly," Anup says. "It is small and can be carried with ease almost everywhere. It's also is very sensitive and works fast. Within a few minutes you can tell if you have a diseased sample."

Using Sandia's lab-on-a-chip technologies for medical diagnostic purposes grew out of a conversation Terry Michalske, newly named Director of Sandia's Physical Chemical Biomolecular Science Center 8300, had with a National Institutes of Health (NIH) program director in 2001. The program director told Terry of a National Institute of Dental and Craniofacial Research (NIDCR) call for proposals to develop a new way of approaching oral diagnostics. Terry shared the information with Len Napolitano, Deputy Director of Biological and Microfluidic Sciences Center 8320, who told Anup and Victoria VanderNoot (8321), two researchers working on microfluidic projects. Anup and Victoria immediately saw how advantages inherent to lab-on-a-chip devices could be harnessed for medical purposes.

TEAM MEMBERS working on the diagnostic device are, from left, Amy Herr, Dan Throckmorton, Victoria VanderNoot, Anup Singh (all 8321), Ron Renzi (8755), and Anson Hatch (8321). Anup is holding a replica of the hand-held medical device that is based on Sandia's lab-on-a-chip technology. (Photo by Bud Pelletier)

Having never worked with saliva samples, the Sandia researchers identified the need to partner with a dental researcher. With the help of Charlie Hasselbrink, an ex-Sandian and an engineering professor at the University of Michigan, a collaboration was established with Will Giannobile, an expert in gum disease and an associate professor at the University of Michigan School of Dentistry. The team also included Harold Craighead, a professor at Cornell University's School of Applied and Engineering Physics, and Mark Burns, a professor at the University of Michigan's School of Engineering.

The team, led by Sandia, sent a letter of intent to NIDCR, wrote the proposal, and obtained the funding in August 2001.

Pretty exciting stuff

"It was pretty exciting," Anup says. "This was the first time Sandia was the lead institution on an NIH grant. I learned about being awarded the funding at 4 p.m. that August day in 2001, and by 5 p.m. our director, manager, and team members were in my office celebrating."

The current research team at Sandia also includes Amy Herr and Anson Hatch (both hired in 8321 to work on the project), Dan Throckmorton (8321), and Ron Renzi (8755). Amy and Dan lead the immunoassay development; Anson is working on preconcentration and multiplexing; and Ron is responsible for all aspects related to device engineering.

Much of the research is centered on detection of gum disease from a patient's saliva and gingival crevicular fluid, the fluid between the tooth and gum. Early detection of gum disease is of significant interest to the medical community. Some 20-45 million Americans suffer from gum disease and more than $2 billion a year is spent to diagnose and treat it.

RESEARCHER ANUP SINGH inserts an immunoassay chip into the microfluidic module of the hand-held device. (Photo by Bud Pelletier)

Working with saliva

"Saliva is a mirror of blood," Anup says. "Everything in saliva exists in blood but at concentrations a hundred to a thousand times lower than blood."

Saliva is already being used for detecting HIV and drugs-of-abuse in commercial instruments. Saliva makes sense as a patient sample; obtaining saliva is a noninvasive process that requires no needles and is much more tolerable than traditional blood taking. Anup anticipates that in the future saliva will be used to detect everything from gum disease to heart disease to cancer.

In addition to biomarkers for gum disease, Amy and Dan are also developing assays for cardiovascular disease markers such as C-Reactive protein.

Anup says that although the primary goal is to analyze saliva, "we have shown that our device can work with blood as well." Having the ability to analyze multiple bodily fluids makes the device useful for a wide variety of clinical applications.

Having already studied saliva samples from healthy people, the Sandia researchers will begin studying samples from 50 to 100 diseased patients in January. The patients are being recruited by Giannobile at the University of Michigan.

"Working with samples from actual patients will give us the opportunity to see how accurate our immunoassay method is," Anup says.

ES&H Manual

(Continued from preceding page)

nor a useful tool. The line found the procedure confusing, and it had to be simplified."

Instead of pure text like the current chapters of the ES&H Manual, the new LOTO home page has easy-to-use-and-find boxes that state clearly where a worker can find the information needed to do his/her job. This will be a partial implementation of a proposed new look-and-feel for the ES&H Manual. The old section had 47 pages (including attachments), 105 steps — 18 of which, it was determined, added value. The new section reduced the total number of pages to 20 and the number of steps to 51, cutting in half what people need to read, if they read it all. The hope is that by being better directed to where to find information, people can get by with less reading and yet gain more understanding.

The most important aspect of doing electrical work is to make sure the power source is turned off prior to starting the work and no one has access to turn it on.

"A goal was to allow a person starting an equipment-specific LOTO to click on a tool, print it out, and begin work in 10 minutes," Kathleen says.

The soon-to-be released LOTO home page will have boxes that send people to tools for members of the workforce, tools for managers, training, general requirements, roles and responsibilities, references, single source LOTO procedure, writing LOTO procedure, and group LOTO procedure.

Kathleen says the end result of the kaizen event was that "everyone could see how the new 4c applied the regulations to their specific work situations." The tools they developed allow people "to be safe and in compliance with LOTO requirements."

The LOTO section 4c is the first of the ES&H Manual to be changed. "Depending on how the change is received throughout the Labs, the entire on-line manual may be revised to reflect the new look-and-feel," Kathleen says.

Kaizen participants

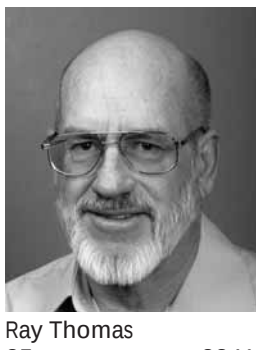
Kaizen participants from the line were maintenance workers, line LOTO users, and ES&H coordinators. Organization 6300 SMEs and the NNSA Sandia Site Office also participated. Participants were: Barbara Lewis (1636), Mike Nicholas (1746), Jay McLauchlin (2915), Mack McLaughlin (6700), Jay Larsen (8517), Glen Cannon (9134), Jim King (10844-5), Carla Lamb (10872), Gary Bultmann (10872), John Torres (14131-1), Mark Warner (6322), Steve Walcott (6322), Ken Miles (6327), and Stacey Durham (6302-1).

Facilitators were Angelique Wells (6004), Ross Miller (6323), and Joe Schriner (6323).

Observers were Ralph Fevig (NNSA/SSO) and Al Bendure (6342).

Mileposts

New Mexico photos by Michelle Fleming



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35 2341

Dave Palmer
30 1751

Gerry Yonas
30 16000

Timothy Cooley
25 4128

Frederick Harper
25 4117

Willie Johns
25 6322

Ron Kulju
25 5917

Clyde Layne
25 8000

Hal Morgan
25 9140

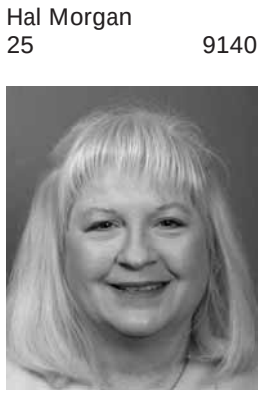
Judy Odinek
25 2522

Steve Ortiz
25 4128

Dale Preece
25 15322

Rob Rechard
25 6853

Jeff Zirzow
25 6214



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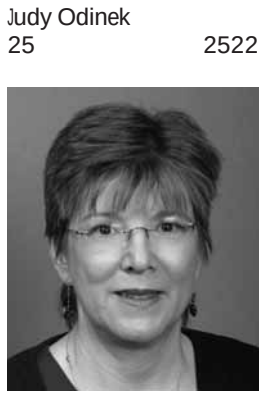

Martha Ernest
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Philip Fajardo
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Richard Harris
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Randy Harrison
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Michael Hurst
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Sandra Klassen
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Glenn Kubiak
20 8750

Michael Neilsen
20 9123

Arnel Oczon
20 15416

Tony Perlinski
20 5714

Stuart Van Deusen
20 1111

Richard Wickstrom
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Jim Davis
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Jay Hammond
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R. Reed Jackson
15 5614

Kevin Malone
15 5934

Russell Mickey
15 4211

Tim Peterson
15 10826

Mike Skaggs
15 2554

Adam Slavin
15 5923

Bryan Spicer
15 6225

Ernest Vinsant
15 6146

Suzanne Visor
15 10263

Woody Weed
15 1635

Nick Winowich
15 6955

Only thing missing from spring New Hire Orientation Program will be its creator, retiring Chuck Loeber

When the spring session of Sandia's New Hire Orientation Program (NHOP) begins Feb. 7, there will be some poignant moments for those conducting it. Chuck Loeber, who created the orientation program four years ago and has managed it since that time, is retiring in February. They say his expertise and inspiring leadership will be sorely missed.

The highly acclaimed program consists of presentations by Sandia VPs, managers and technical experts along with tours of the major facilities on KAFB, and educational films, books, and discussion groups. In addition, some participants go on trips to other sites such as Sandia/California, the Kansas City Plant, and Nevada Test Site.

A 14-topic subset of the program called "Nuclear Weapons 101" is featured and has been designated as a requirement for all permanent technical new hires in a number of organizations: Divisions 2000, 4000 and 14000 plus Centers 1600, 1700, 1800, 9100, 9200, 9300, 9500, 9600, 9700, and 12300.

New hires in other Sandia organizations and limited term employees and staff augmentation personnel may also participate.

The calendar for this 13-week session and other related information is on the NHOP website: http://www-irn.sandia.gov/organization/div2000/ctr2900/nhop.

Managers or new hires interested in further information should contact Jeneane Taylor (2911) at sjtaylo@sandia.gov or by phone at 845-9646.

Chuck established the program, carried out in Weapon Knowledge Management Dept. 2911, to enhance early career development for Sandia new hires and to maximize their retention rate. New hires typically have little understanding of Sandia or nuclear weapons programs when they arrive. Most spend from six to 12 months after their arrival without a security clearance, preventing them from engaging fully in the work of their home departments. This waiting period seemed a good time to orient and help them prepare for duties in their home departments.

This experience gives them unclassified knowledge of Sandia's capabilities and mission, engineering processes, and emerging technologies, plus the basics of the DoD/DOE relationship, the nuclear weapons complex, and national security strategy.

There are two 13-week sessions interspersed with one six-week mini-session each year. Managers can determine the level of participation by their new hires.

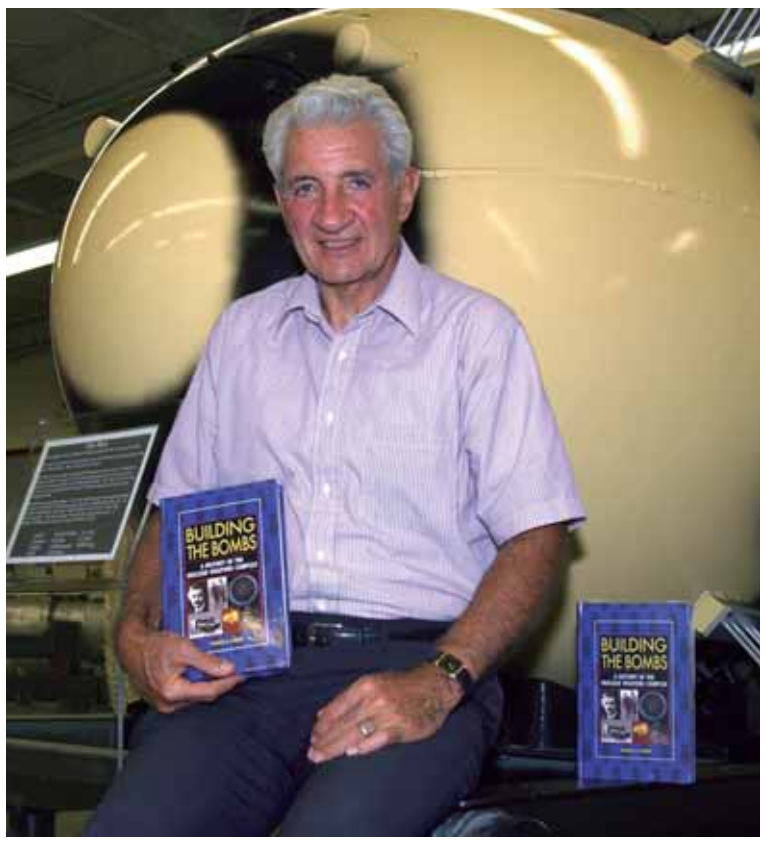
Office space is provided in Sandia Science and Technology Park Bldg. 10500 for uncleared new hires enrolled in the program.

Chuck, author of *Building the Bombs*, a Sandia-published non-technical book about the history of the nuclear weapons complex (*Lab News*, Aug. 9, 2002), brought a lifetime's accumulation of experience and knowledge to the program he created.

"His expertise in nuclear weapons and the history of the Nuclear Weapons Complex (NWC), and his inspirational leadership have made this program a truly positive experience for countless technical new hires," says Mike Eckart (2911), Chuck's heir apparent.

"The program will continue, but Chuck will be sorely missed," Mike says. "We wish him well in his retirement."

Although February will bring Chuck's retirement, he will continue to conduct his history of the NWC and tours of the National Atomic Museum.



CHUCK LOEBER established the New Hire Orientation Program to give new technical employees a comprehensive view of the nation's nuclear weapons complex. Sandia published his book about the complex, *Building the Bombs*, in 2002. (Photo by Bill Doty)

Feedback

Employee numbers will replace SSN's (eventually)

Q: *Some years ago, Lynn Jones, former VP, and others made a great attempt to protect employees' personal information. At that time, the Social Security Numbers were removed from the training enrollment sheets, the computer security plans and several other documents. What happened to that spirit? Lately I have been asked to give out my SS# on Sandia programs as if I was giving out candy on Halloween.*

In the last month, I have been asked by Sandia to provide my SS# to:

1) Someone in New York City to obtain my Sandia anniversary gift.

2) A secretary at Lovelace to get checked by a physician.

3) A salesclerk at Winrock, to get my eyeglasses.

4) Somebody at Lockheed to take several mandatory Lockheed Martin classes.

5) Someone at Fidelity to check my retirement plan.

6) Someone at TQ3 in order to get my travel plans.

And the list goes on.

No wonder there is so much identity theft. Sandia has not advertised other options as far as I am aware of. Are there any attempts being made to stop giving out our personal information? "Trust us" is not getting the job done since increasing numbers of my co-workers are victims of identity theft. If we are to be leaders in security, I believe we should at least take this issue more seriously. Are we?

A: We too are concerned about this issue. There is work on a systemic solution, but the use of SSN as an identifier is so wide that it will take time and be costly. IES has funded the Enterprise Person Project to address a number of issues. The change from SSN to a separate unique employee ID or employee number has been approved as part of the project proposal. The current plan is to have a sunset timeframe that would make SSN unavailable for use by most systems by mid FY07. Systems will need to use the new employee number as an identifier after the sunset and the various systems will bear the cost of this change. Some systems such as payroll, security, and benefits/savings plans will continue to require the use of SSN. However, SSN should not be required for system access. There are areas outside our control such as access to a DoD site or a visit to your physician where SSN could still be required.

In the meantime we have restricted the unnecessary use of SSNs and have partnered with suppliers such as our medical plan administrators to discontinue the use of SSNs on their ID cards and forms. However, as you point out, our service award suppliers require a specific identifier for our employees and this will need to be SSN until the new employee identifier is in place. Several years ago Sandia's Forms Management Program reviewed 416 Sandia forms that asked for SSNs, completely eliminated 76 forms, and eliminated use of SSNs on an additional 132 forms. SSNs were retained on the remaining 208 forms as prudent risk management.

— BJ Jones, Director (3500)

Employee State of the Labs presentations set for Livermore and NM

'From Nanotechnology to the Stars'

Sandians are invited to hear President Paul Robinson and Executive VP Joan Woodard give their annual State of the Labs presentation next month. Featuring the theme "From Nanotechnology to the Stars," Paul and Joan will talk first to Livermore employees 1-2:30 p.m. Monday, Feb. 21, in the 904 Auditorium. The Albuquerque session is 9-10:30 a.m. Wednesday, Feb. 23, in the Schiff Auditorium. Seating is on a first-come basis.

The Feb. 23 session will be video-linked live to Sandia's Carlsbad, N.M.; Washington, D.C.; and Nevada offices. Employees there will receive specific information closer to the event.

The Sandia leaders will discuss a wide range of the Labs' work that is helping to keep the nation secure and technologically superior. Beginning with nanotechnology, where new materials designed molecule by molecule will benefit humanity in exciting new ways, the address expands into Sandia's many defense and energy contributions, including recent major progress in fusion energy. The talk then extends into interplanetary space, where Sandia contributions are helping to ensure the success of NASA missions.

The formal presentations will last about one hour. Paul and Joan will then respond to employee questions.

The State of the Labs presentation will also be given to invited Albuquerque-area community leaders the evening of Feb. 24 at the Hyatt Regency hotel.