To paraphrase Mark Twain, reports of the demise of Sandia’s Tonopah Test Range have been greatly exaggerated.

Given the recurring discussions over the years about retiring the range, it’s understandable that some Sandians might think the TTR has entered the history books as part of Sandia’s storied past. But that isn’t the case. It’s still very much a going concern.

Ajoy Moonka, senior manager of the Stockpile Support and Test Group (2910), wants to get out a simple message: Tonopah Test Range is open for business. It’s serving the nation’s nuclear weapons mission and, through work for others agreements, conducts tests for customers in a number of federal agencies, including Man Portable Air Defense System (ManPADS) tests that help protect American forces in war zones.

By Bill Murphy.

In recognition of Women’s History Month, Sandia corporate historian Rebecca Ullrich tells the story of several of the pioneering women who worked at the Labs as scientists and engineers in the early years. See the story on page 12.
That’s that

First off, how ’bout them Lobos? Regardless of how the 2009-2010 season ends for them, this has been a most incredible time for a team that was not expected to be much of a factor in the Mountain West Conference. As I write this, the Lobos have already climbed to No. 8 in the weekly AP college basketball poll, and are assured of a bid — and probably a pretty high seed — in the post-season NCAA tournament. You know something really special is going on when folks who never pay the slightest attention to college hoops start talking about the team. We can all draw our own lessons from this remarkable season. But more to the point, we can just enjoy and savor it. Finally, this is a young team, and after if they’re going to be like the Rams? Remember: the Rams always do things in threes. (A nod here to Arthur C. Clarke.)

* * *

Guess I’m on a sports kick, but I also have to take note of the just-completed Vancouver Olympic Winter Games. A couple of impressions: Snowboarder Shaun White is a superstar. So is Apolo Ohno, and Lindsey Vonn. In fact, all of our US medalists are collectively a pretty impressive bunch. Hey, you don’t get to that level of accomplishment without some extraordinary gifts. And I suspect that rare talent barely even tells the story. Athletes competing at the Olympic level are the living embodiment of Thomas Edison’s observation about genius: “It’s 1 percent inspiration and 99 percent perspiration.

You know what really impresses me about all these games? In competitions that are decided literally by hundreds or a second, the same people keep winning again and again. The same people are just that blink of an eye better than everyone else.

* * *

Sandia enjoyed a nice twoffer this week in terms of media coverage: The Wall Street Journal, which recently overtook USA Today as the nation’s biggest newspaper (circulation-wise), featured two stories in the same week about Sandia. One was about our battery abuse lab, highlighting the work by Pete Roth and Christopher Orendorff and the folks in Advanced Power Sources R&D Dept. 2546. That story, by the way, featured a large color photo of Pete by Randy MONToya that we ran in the March 28, 2008, Lab News. The other story was about a collaboration between Lawrence Livermore and Sandia, where, as the Wall Street Journal story put it, “both of the city’s weapons labs ... are moving forward on plans to build a campus where graduate students and curious researchers can work together on clean-energy technology.” Bob Carling, director of Transportation Energy Center 8300 was quoted to very good effect in the story, saying, “We’ve been hiding behind the veil for too long.”

It’s especially gratifying for the folks in my group — Media Relations and Communications Dept. 3651 — and California-based Business Development/Public Relations and Strategic Communications Dept. 8529 when our efforts help garner national media coverage for our researchers.

Just finished a book called One Second After: it’s about what happens when some undisclosed enemy sets off one or more nuclear weapons in the upper atmosphere above the US. The blasts generate an electromagnetic pulse, or EMP, that effectively turns off 21st-century American life. I’m no expert, but a bit of online research suggests the basic concepts in the novel are accurate: an EMP of sufficient size would, indeed, play havoc with the nation’s infrastructure, with devastating results. The picture the novel paints is pretty alarming, alarming to the extent that I sure hope there are some smart folks — including, of course, Sandians — working on ways to counter this kind of threat.

See you next time.

— Bill Murphy, (505) 845-0865, M5065, tmurphy@sandia.gov

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Sandia National Laboratories

http://www.sandia.gov/LabNews

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Retiree reminder

Medicare Part A & B reminder for current retirees
First announced in letter mailed January 2010

Effective Jan. 1, 2011, Sandia Labs will discontinue the UnitedHealth-

care Premier plan and plans to offer only Medicare Advantage

plans. This change will affect all Sandia-eligible enrollees. The

Sandia Health, Benefits, and Employee Services (BHE) group
detailed this change in a January 2010 letter sent to all affected

individuals.

You may need to take action to ensure you have uninterrupted coverage.

To be eligible for a Sandia Medicare Advantage plan, you must be enrolled in Medicare Part A & B.

If you are already enrolled, you do not need to take any action. If you are not currently enrolled, you may be able to sign up during the general enrollment period that ends March 31, 2010 (coverage will take effect July 1, 2010).

To learn if you can sign up for Medicare, visit medicare.gov; if you are a Sandia-eligible enrollee, contact the Social Security Administration at 800-772-1211 for more information.

To review the letter BHE mailed in January, visit bhe.sandia.gov and search “retiree letter” or “1781”.

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Recent Patents

Note: Patents listed here include the names of active and retired Sandians only. Patents issued to non-Sandia inventors are not included. Following the listing for each patent is a patent number which can be searched at the US Patent and Trademark Office website (www.uspto.gov).

Timothy Boyle (1815): Solution Synthesis of Germa-
nium Nanocrystals. Patent No. 7,591,871
Kamlesh Patel (8621), Ken Peterson (8312), and Ron Renz (8125): High Temperature Flow/Through Device for Rapid Solubilization and Analysis. Patent No. 7,739,139
Jim McElhanon (8218), Robin Simmons (8625), Tom Ziher (8223), Greg Jamison (5918), Kamyr Bahramian (5923), David Wilee (1714), and Chad Staiger (6338): Thermally Cleavable Surfactants. Patent No. 7,595,349
Jim Brennan (8621), Anup Singh (8621), Daniel Throscottom (8621), and James Stamps (8229): Portable Modulator Detection System. Patent No. 7,602,307
Kevin Dixon (1432) and John Forysthe (1442): Physical Contact Variety and Method for a Vehicle. Patent No. 7,610,130
Blake Simmons (8625): Surface Engineered Nanopar-
ticles for Improved Surface Enhanced Raman Scattering Applications and Method for Preparing Same. Patent No. 7,608,461
Dawn Skala (8238), Stewart Griffiths (8000), and Peter Yang (8656): Vitreous Carbon Mask Substitute for X-Ray Lithography. Patent No. 7,608,461
Robert Moore (6771), Paul Pickard (6770), Edward Parma (6771), Milton Vernon (6771), and Fred Gelbard (5711): Integrated Booster, Superheater, and Decomposer for Sulphatic Decomposition. Patent No. 7,645,437
James Ramsey (5713), Patrick Finley (6323), and Brad Melton (6325): Determining Position Inside Building via Laser Rangefinder and Handheld Computer. Patent No. 7,645,475

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Lab News Reader Service

The Sandia Lab News is distributed in-house to all Sandia employees and on-site contractors and mailed to all Sandia retirees. It is also mailed to individuals in industry, government, academia, nonprofit organizations, media, and private life who request it.

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Others:
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Web users:
California selects Livermore Valley’s i-GATE as state innovation hub

By Mike Janes

The city of Livermore has moved one step closer toward its goal of establishing the Livermore Valley as a high-tech anchor for the region’s advanced manufacturing, Business, Transportation and Housing Agency selected the city’s i-GATE (Innovation for Green, Advanced, Transportation Excellence) as an inaugural member of the California iHub demonstration program.

The mission of i-GATE is to maximize the economic impact of green transportation and clean energy technologies through expedited technology transfer, partnerships, and increased collaboration opportunities, academic alliances, and a technology incubator for the development of high-growth green businesses. The city of Livermore is the iHub coordinator and Sandia is the program lead. Partners include Lawrence Livermore National Laboratory (LLNL), University of California campuses (Davis and Berkeley), Cal State East Bay, Las Positas College, the Livermore Chamber of Commerce, and four nearby cities (Pleasanton, Dublin, San Ramon, and Tracy), among others.

This represents an exciting opportunity to both advance technology in the transportation arena and to increase our partnerships with the city of Livermore and local businesses,” says Rick Stulen, Div. 8000 VP president.

The i-GATE hub will be leveraged by the Livermore Valley Open Campus (LVOC), a joint venture between Sandia and LLNL to promote greater collaboration between the world-class scientists at the labs and their partners in industry and academia. According to Energy Secretary Steven Chu in a press release last year, the LVOC will maximize the return on the nation’s investment in nuclear security.

“By leveraging the groundbreaking research of our nuclear security labs through private sector collaborations, we will bring breakthroughs to the marketplace faster and find new solutions to the energy problem,” says Chu. The i-GATE effort is designed to drive the Livermore Valley as the core of an energy research cluster that will be a key enabler for the industry’s achievement of a two order-of-magnitude reduction in diesel pollutant emissions, and simultaneously, higher fuel efficiencies over the last two decades.”

Dennis Siebers

Dennis Siebers (8362) has been named a Fellow of the American Society of Mechanical Engineers (ASME). The Fellow grade recognizes significant engineering achievements and contributions to the profession. Out of 91,537 total ASME members, there are only 2,956 fellows.

According to the ASME citation, Dennis was honored for “research at the forefront of developing a new family of solar receiver technologies, in particular the development of the Solar One receiver for solar-central-receiver power plants and fuels.”

During his career, Dennis developed new heat transfer understanding related to solar-central-receiver power plants and was instrumental in evaluating the Solar One receiver thermal performance.

Since 2002, Dennis has managed the Engine Combustion Department in the Combustion Research Facility (CRF). He received his BS and MSc in mechanical engineering from Purdue University in 1973 and 1975, respectively, and his PhD in mechanical engineering from Stanford University in 1983. He joined Sandia in 1976 and worked under Sandia’s Doctoral Study Program while at Stanford.

Under Dennis’ leadership, the Engine Combustion Department provides the technical base on advanced combustion strategies needed by the US engine industry to develop more efficient, cleaner internal combustion engines for transportation. He also provides technical management support to DOE’s engine combustion research programs, including helping DOE create multiyear research plans for advanced engine research and development to manage engine combustion research projects.

Dennis plays a key role in the CRF’s collaboration with industry, universities, and other national laboratories. He leads a memorandum of understanding between 15 engine and energy companies (Ford, GM, Chrysler, Caterpillar, Cammins, Detroit Diesel, John Deere, GE, Navistar, Mack Truck, ExxonMobil, ConocoPhillips, Shell, Chevron, and BP) and six national laboratories (Lawrence Livermore, Los Alamos, Oak Ridge, Argonne, National Renewable Energy Laboratory, and Sandia) on engine/fuel combustion research that is supporting the development of the next generation of clean, high-efficiency engines for transportation.

He is actively involved in the international combustion research community. Dennis is a Fellow in the Society of Automotive Engineers (SAE), the author or coauthor of more than 80 papers, and the recipient of several annual best paper awards from various organizations: the ASME Melville Medal, the SAE Horning and Arch T. Colwell Awards, the Central States Section of the Combustion Institute best paper award, and the ASME ICE division best paper award. He is on the editorial board for the International Journal of Engine Research, continues to be on the organizing committee of major international conferences on engine research, and has served as the SAE Vice Chair for Combustion on the Fuels and Lubricants Activity.

SANDIA LAB NEWS  March 12, 2010  Page 3
Cliff has made a career out of tackling great challenges at Sandia. A distinguished member of technical and scientific communities in water treatment and distribution, detection of trace explosives, nuclear waste management, and microchemical sensors, Cliff has been an important agent for environmental monitoring. Now, Cliff is focusing on concentrating solar power and renewable energy technologies. It’s a response impetuous to gravity, energy needs and national attention, and Cliff has done it all in just 17 years.

The Chinese Institute of Engineers–USA honored Cliff’s achievements by making him the 2010 Asian American Engineer of the Year. The CIE–USA annually presents the Asian American Engineer of the Year award for outstanding achievements in the engineering profession.

Sensitivity analyses using these probabilistic models can also be useful for policy makers on system parameters that have the most impact on these metrics.

— Sandia researcher Cliff Ho

By Stephanie Hobby

Cliff joined the Labs in 1992 to develop thermal-hydropologic models for the Yucca Mountain Project, and quickly became a lead investigator for the Viability Assessment and Site Recommendation reports that were submitted to Congress and the president. He also led the development of comprehensive performance-assessment models of complex systems ranging from long-term covers for waste isolation to chemical transportation through soil.

Water treatment and solar energy

In 2000, Cliff retired and led a project to develop microchemical sensors to monitor environmental contaminants in wells, which led to four patents and significant commercial industry interest. Cliff also worked to improve sensor systems and protocols to detect trace explosives for DOE and the Department of Homeland Security. Five years later, he began research in water treatment and distribution, security, including UV disinfection, water treatment and distribution security, including UV disinfection, and modeling to predict how contaminants would permeate the system parameters that have the most impact on these metrics.

The objective is to honor the inherent uncertainty in these complex systems, Cliff says. "We can then provide companies and policy makers with a range of reliability estimates in their models by quantifying the likelihood of achieving specific cost and performance metrics. Sensitivity analyses using these probabilistic models can also be used to prioritize R&D activities on system parameters that have the greatest impact on these metrics."

Those around him continue to be impressed with Cliff’s innovative work and creative approaches to engineering challenges. Ray Finley and Laurence Costin, two of Cliff’s managers who have known him since the beginning of his career, wrote in their letter of support, "Cliff is an outstanding leader and engineer who, over many years, has demonstrated a significant impact on the opportunities that Sandia provides for its engineers. The ability to work on many different yet nationally important programs within the same company and to be able to engage in water distribution and solar energy research further enhances his career.

Cliff turned his attention to solar energy in 2008 and is currently a principal investigator in a group that looks for ways to use concentrating solar power to co-power and replace grid electricity for utility-scale electricity generation. Concentrating solar power uses a large array of mirrors to focus sunlight onto a receiver, harnessing the resulting heat to generate electricity using a heat engine. Cliff developed the models and analyses that can improve the system’s efficiency and performance. For example, the force of gravity and wind can distort the shape of the mirrors, decreasing efficiency and ultimately increasing the cost of electricity. Cliff is also pioneering the use of probabilistic models to more reliably predict the performance and cost of concentrating solar power, which these probabilistic models have the advantage of being able to quantify the impact of uncertainties on simulated performance metrics such as energy production and cost.

In 2008, Cliff turned his attention to concentrating solar power, with the intent of improving its efficiency and cost-effectiveness. "What isn’t immediately apparent in his vitae is that Cliff is an excellent communicator," Cliff’s managers write. "He communicates in such a way as to make the resulting heat to be used for space heating (or cooling), water heating, or electricity generation."

That ability was a hallmark of Cliff’s teaching career at the University of New Mexico. Between 2001 and 2003, Cliff served as an adjunct professor in the Chemical Engineering Department, teaching environmental science courses to Sandia employees. The ability to keep the range operational, supported by a cadre of Sandians assigned to TTR, is a vital one, and one that is not likely to go away; TTR operate in a new business/operating model. A number of studies at Sandia in 20 years. That program will likely require a number of developmental flight tests. With the NNSA NOO, there is no question about where these tests will be conducted.

The US Air Force at the Nellis Test and Training Range, adding that a new TTR business model may involve Sandia procuring some support services from the USAF when it’s mutually advantageous.

The TTR of the future won’t look exactly like the TTR of the past. Ajoy says, and when climbing the   

Underlying his notes, personnel at TTR sometimes feel like a “neglected cousin,” a sentiment that probably isn’t helped any by the fact that the range has been kept on the periphery of the organization, often times over the past couple of decades. But a pervasive uncertainty about the TTR’s status hasn’t deterred staff from wanting to keep their eye on the ball. Ajoy says.

“TTR is very dedicated to the mission and make the best of rather old equipment, facilities, and infrastructure that exists due to lack of investment for over a decade,” he says.

One example of the TTR team's focus and dedication is the range. And once, while working in partnership with Center 4100, a team of experts from DOE and the Department of Defense, Cliff says, “TTR is in a campaign mode, with a core of Sandians assigned full time to keep the range operational, supported by a cadre of Sandians and contract personnel who staff the site during test weeks.

Tonopah Test Range

(Continued from page 1)

Tonopah Test Range, established in 1957, occupies 280 square miles tucked in the northwest corner of the 4,687-square-mile Nellis Air Force Range. Currently, 113 employees, with the remainder being contractors who work for Sandia, staff the site during test weeks. Ajoy says, "The Chinese Institute of Engineers–USA honored Cliff’s achievements by making him the 2010 Asian American Engineer of the Year. The CIE–USA annually presents the Asian American Engineer of the Year award for outstanding achievements in the engineering profession. The ability to work on many different yet nationally important programs within the same company and to be able to engage in water distribution and solar energy research further enhances his career.

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Looking back at an oceanographer's unlikely career

VP Les Shephard retires after almost 30 years at Sandia

By Stephanie Holinka and Stephanie Hobby

In the mid-1970s, a terrific storm ripped through the Mississippi River Delta, tearing up the coastline and completely destroying any hope of data collection by a small group of dedicated scientists. Although all the instrumentation was demolished and the researchers had to start from square one, it was a turning point in the life of one influential Sandian. If the waters had remained calm that day, Les Shephard might never have made his way to the Labs. Les decided to take advantage of a research partnership between A&M and Sandia. A team of scientists was evaluating the sea floor off the Mississippi River Delta as a potential site for subsurface disposal of nuclear waste. The goal was to assess the stability of the sea floor and pore pressure, and by working on his doctorate, Les contributed to subsurface degrees in oceanography at Texas A&M University with the intention of going into the oil industry. While working on his doctorate, Les took Andrew to Carlsbad, where he worked at the Sandia National Laboratories, and internationally recognized expert in risk and performance assessment, Anderson, a now-retired Sandian and internationally recognized expert in risk and performance assessment, and former manager of Sandia’s Subseabed Programs Department

“Rip called me out of the blue and asked me to come out here and think about the subsurface disposal program,” Les says. “I had never been to New Mexico, and as an oceanographer, I figured one time in your life you ought to visit.” Although Les wasn’t told on the idea of using his doctorate in oceanography to work in the high deserts of New Mexico, Rip took him to the Sandia Crest, and as Les watched the sun go down over the mesa, the idea suddenly didn’t seem quite so ridiculous.

“So I said I could seriously consider such a thing. But of all the people, I’ve interacted with lots and lots of people, Rip was a tremendous mentor. He was an innovative and creative individual as anybody I’d ever met,” Les says. “So I joined the subsurface disposal group and people don’t know that Sandia really had a nationally, if not globally, acclaimed group that did ocean modeling. It’s not a surprise when you think about who we are and what we do, but ocean modeling is something that was an integral part of understanding the environmental consequences of disposal and high-level waste in the oceans. The subsurface disposal group stayed together for 13 years, disbanding in 1987 when the Nuclear Waste Policy Amendment designated Yucca Mountain as the sole site for characterization.

“Most Sandians don’t know that the systems analysis that developed out of this group became the fundamental basis for the performance assessment process as part of the subsurface program,” Les says.

“The modeling of Earth systems in a probabilistic manner with quantifiable uncertainty characterization to determine the confidence and reliability of WIPP in 1998, and also led to the license application for certification of Yucca Mountain in 2007,” he adds.

Yucca Mountain and WIPP

After the subsurface program, Les worked for Yucca Mountain, performing testing at G-Tunnel at Nevada Test Site. He was present at the last underground nuclear test at the Nevada Test Site in 1992. In 1995-1999, Les moved his family to Carlsbad to continue his work on WIPP. “For many reasons, a senior Sandian needed to live in Carlsbad to demonstrate to an uncertain community that WIPP was safe. What also brought me to WIPP was the fact that WIPP was an ocean 250 million years ago. I was just a little late,” Les laughs. “But I felt right at home working in salt, and I went from conducting large-scale experiments at sea to large-scale experiments underground."

Japan’s NEDO partners with DOE labs

The structure of work on one’s part cannot be the work of one man or one nation, but must be a peace which rests on the cooperative effort of the world.

Franklin D. Roosevelt

Because Japan’s country-specific grid demo and test projects provide unique data for this project, the collaboration allows Sandia to demonstrate and compare Japanese technologies and exchange data with NEDO. Gov. Bill Richardson initiated the New Mexico-Caifornia partnership in 2008 with the goal of becoming the first state with a full green grid. He has also set a goal of becoming the leading state in renewable energy export and becoming the center of the North American solar industry. Prior to signing ceremonies and a media event at the Buffalo Thunder Resort in Pojoaque, N.M., announcing the projects, the NEDO delegation visited Sandia, where NEDO President and CEO Takefumi Fukumizu and Sandia President and CEO Ray Andricuski met with Sandia's folks.

Director Tom Hunter were able to discuss the importance and potential of NEDO-Sandia collaboration.

LES SHEPHARD pays close attention to a discussion about Sandia-developed arsenic water treatment technology during a visit to Jemez Pueblo. (Photo by Randy Montoya)

LES SHEPHARD says close attention to a discussion about Sandia-developed arsenic water treatment technology during a visit to Jemez Pueblo. (Photo by Randy Montoya)

“J came out here for a couple of years thinking I’d go back to the oil industry. And like so many people who came before me, I never left.”

— Les Shephard

Les counts WIPP as the most successful technical achievement of his career. “We brought together a group of people dedicated to doing something that has not yet been replicated,” says Les. “WIPP’s been operational for 10 years and been recertified twice. It’s done all the things it was supposed to do, and it has met and even surpassed a foundational precedent for the upcoming resurgence in nuclear energy technology.”

After WIPP’s certification in 1999, Les briefly headed the Computer Sciences group. He then spent some time as Paul Robinson’s staff director. Six years ago in March, he became VP of Sandia’s Energy, Security & Defense Technology Div. 6000.

Solving global energy and water issues

“When I came to Sandia, I didn’t really know what it was other than when I worked with them in the field, it was a great group of folks to work with. They took on hard problems, and if things didn’t go well, they got back in the lab and didn’t give up. What I learned was that there was a spirit around these labs that I knew about, but I really got a feel for it.” Les says. “I came out here for a couple of years thinking I’d go back to the oil industry. And like so many people who came before me, I never left.” Although Les is retiring from Sandia, you won’t find him whiling away his days on the golf course. He is headed to the University of Texas at San Antonio to head up a new Institute for Conventional, Alternative and Renewable Energy (ICARE) to help the university’s efforts to solve global energy and water crises. The UTSA position also offers him and his wife of 37 years, Darlene, the chance to be closer to their family and watch their grandchildren grow up.

It’s tough for an A&Mc like like to pull for schools in the University of Texas system, but he says he’ll get over it. “It’s part of who I am. I’m a diehard Aggie. Having said that, this is really another opportunity of a lifetime. I intend to partner with other Texas institutions — including his alma mater — and Sandia to help develop the next generation of energy leaders. You can be sure that I say will have to deal with difficult problems in energy, climate and issues around nuclear power. "These are hard issues, and we know the leadership of tomorrow going to come from? What better way to leave a legacy than to really focus the next 10 years of my life on that?" Les says.

“Clearly I’m confident this will be the case, but I hope Sandians never lose sight of their commitment to serving the country, never lose sight of the fact that the American public, whether they know it or not, depends so heavily on this institution,” Les says.

“These areas of energy security and nuclear security are critically, critically important to American’s security and future. I hope and expect Sandians to continue to be national and global leaders in that area, and to really step out of their comfort area and lead in a much more visible way and really present on the global scene in a big, big way.”
Art worth saving: One Sandian revives decades-old drawings of the world’s nuclear reactors

Story by Stephanie Hobby

It is an age when many publishers and even libraries are tossing hard copies of bulky paper publications in favor of compact digital storage, finding and scouring rare books, magazines, and posters from almost certain obscurity can be a true labor of love. Ron Knief’s (1382) efforts to save more than 100 detailed poster-sized drawings — wall charts — of nuclear reactors is proving to the benefit of both current and new generations of nuclear engineers.

From the mid 1950s through the early 1990s, Nuclear Engineering International printed large, technically accurate images of nuclear reactors from all over the world. These charts were folded and included in select issues of the magazine. A Sandia nuclear engineer and former University of New Mexico professor, Ron understood and valued the educational value of each image. “I could teach you more about a reactor in 10 minutes with one of these than I could by taking you to several hours using more traditional one-line diagrams and photographs,” Ron says. “The three-dimensional cutaway view is something that doesn’t exist in the real world, so the charts are very powerful tools.”

Ron carefully saved all of the charts he acquired and stored them over the years in courses at UNM and Sandia. “As a professor who teaches reactor design, there was no substitute for having access to a 3-D rendition,” Ron says. “This is something that was not available in textbooks at that time.”

Ron hit the jackpot when he received permission to copy and distribute the specific charts that he had collected. “It was almost a sacrilege to take a large chart and put it on a single 6-by-9-inch page in a book as a black and white diagram,” Ron says. “But nonetheless, it still allows a reader to learn from it, and it still allows a reader to learn from it, and it still allows a reader to learn from it.”

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Ron collected more than 100 wall charts from Nuclear Engineering International, each depicting a different nuclear reactor in detail. (Photo by Randy Montoya)
**Plant the seed**

Sandia’s Site-Wide Environmental Impact data will impact operations for a decade

By Stephanie Holinka

The SWEIS Source Document Project (comprising members of Sandia’s Environmental Planning Dept. 4131 and Environmental Programs Dept. 4133) will collect data from around the Labs during FY10 and FY11, asking members of the work force to look into Sandia’s future and think about what types of work will be done in their facilities over the next 10 years or so. The project will interview Level 1 managers and staff members Labs-wide to provide information on current and future operations (i.e., site-wide, corporate, hazardous materials, noise-producing events, facility changes, water use, electricity use, etc.). They will use the collected data to produce more than 30 documents related to the Labs’ future, including descriptions of the types of work planned over the next 10 years. DOE will take these documents and use them to develop Sandia’s new Site-Wide Environmental Impact Statement (SWEIS), the master document that sets the environmental boundaries in which the Labs operates. The data collection is part of the required environmental management process. The National Environmental Policy Act of 1969 (NEPA) is a set of federal policies that document and categorize the environmental impact of every activity at a site. All Sandia activities are documented and evaluated under the NEPA process. "NEPA helps people make decisions about work activities based on the environmental consequences of that activity," says Stephanie Salinas of Environmental Planning Dept. 4131. "The NEPA process also ensures that the information collected about impacts is freely available before actions are taken." Sandia’s most recent site-wide environmental impact statement was generated in 1999, when the work profile looked considerably different from what is done now.

"As the nature of Sandia’s work has changed," says project manager Joe Ronaghi (4133), "the [1999] NEPA statements are increasingly out of date." In addition, regulations for things like storm water management, pump tanks, and greenhouse gas emissions have changed. "There are also external changes that affect operations," Joe says, "such as the Mesa del Sol development, new neighborhood encroachment, and new DOE requirements.

"The new survey will also update operational changes at Sandia. New facilities such as Red Storm, CINT, and MESA place increased demands on resources and personnel; they were not covered in the 1999 SWEIS." "We’re hoping, to align our site’s NEPA coverage with the DOE National Security Enterprise. We’re going to look at facilities’ operational limits to assure that they are appropriate for our facilities. If it looks like we’ll be performing more tests than we have documented in the past, we have to make those changes," says Stephanie, "to show that we’re protecting the public. We need to help the Labs make informed decisions about the environment and about Sandia’s future."


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**Employee death**

*Who’s your daddy?* was one of Ira Sandoval’s favorite questions

Ira Sandoval (4847) died Feb. 11. He was 51 years old and had been at Sandia more than 30 years.

“When the Facilities craft and maintenance workers started at Sandia many years ago, it usually included a trip to the Facilities warehouse,” recalls his supervisor Pam Minney (4847). “Ira would greet them with a smile, joke, or a tease. One of his favorite questions was ‘Who’s your daddy?’ when scanning parts into a supervisor’s name. That told him which bar code to use.

“He could troubleshoot problems and help the administrative staff resolve inventory issues. Ira made things better and more efficient at the warehouse. He was a leader among his peers. He was very conscientious and caring. He was a warm and caring person and was really involved in making the operation run smoothly.”

“Ira was a family man,” says his sister Laura Latoma (4242). “He spent his time with his wife, children, and grandchildren. He was so proud of his two grandchildren and often went to his grandson’s baseball and basketball games. Ira enjoyed sports, whether it be watching, playing, or coaching. He was very respected at San Felipe Pueblo. Tribal leaders often looked to his wisdom for help. He never refused.”

For Jennifer Standridge (4847), Ira was more than a co-worker. He was a friend. “I enjoyed coming to work,” she says. “He would make me laugh.”

“We talked about fixing an old pickup truck and how I would help him pull the engine out. We never got around to doing it.”

**Diversity is all of us, says Al Romig**

“Money can replace the building and equipment, but not the fine people who work here. We came in different ships, but now we’re all in the same boat.”

EXECUTIVE DIVERSITY CHAMPION Al Romig gave a poignant talk at a recent event honoring the chairpersons of Sandia’s Diversity Councils. Al will be the keynote speaker during the upcoming Sandia Diversity & Inclusion Conference, scheduled for April 5. More details to come in the Sandia Daily News and Lab News. (Photo by Randy Montoya)
The peak of the epidemiologic curve for the H1N1 virus has passed. Currently low levels of Influenza-like Illness (ILI) are being reported both nationally and within the state of New Mexico. Typically, now, is when we start to see seasonal influenza. However, there has been neither a dramatic rise in the seasonal flu nor a rise in Sandia's sickness absence levels due to cold or flu.

HBE doctors are often asked by our patients about getting the H1N1 vaccination. One question I'm asked, "It looks like H1N1 is ebbing away, so should I bother with a vaccination?" My answer is yes, if you haven't already had the H1N1 shot, you should get one. Although the H1N1 virus is on the decline, it can and will likely reemerge.

Sometimes, I hear, "I'm pretty sure I had the H1N1... so should I get vaccinated?" My answer is again, yes. In the first place, it’s not feasible to check everybody’s blood to see if they have had the H1N1 infection. It is quite possible that an individual may have had an upper respiratory tract infection with similar symptoms and is therefore still susceptible to the virus. Susceptibility to infectious disease often boils down to whether the host (you and me) has experienced in the past something akin to the infectious disease that is presently circulating. For H1N1, those with relative immunologic naiveté, individuals younger than age 24, were more at risk for complications because their immune systems did not recognize the viral threat like the immune systems of those in the more mature age strata. The importance of a robust immune system cannot be emphasized enough. The best way to bolster immuinity, besides getting an infection, is to maintain good health habits through the year. Eat right, get enough sleep, exercise, and get vaccinated. For sure, even if you catch a cold or flu virus, your efforts to maintain good health will bolster your immune system's ability to fight it and help prevent complications. If the virus mutates just a bit, causing it to circulate again and perhaps become a bit more virulent the next time around, it may well be that a vaccination this year could give your immune system an edge and help it to clinically attenuate a future infection.

At Sandia, HBE did not receive the amount of H1N1 vaccine we requested to offer the shot to all of our employees. Sandia did get a small allotment that was given to our high-risk patients in the Disease Management Clinic and our health care workers. Now, H1N1 is readily available to all who want it, regardless of risk stratification. You can get an H1N1 shot in the community, at your neighborhood drugstores, through your primary care provider, and your health care plan. So, take good care of yourself now and through the flu season and get an H1N1 shot this week.

**Case Issue: Cheating**

**Background:**
A Sandia employee contacted the Ethics Office and stated that they witnessed what appeared to be an answer sheet exposed by another employee during a computerized exam. It was alleged that the employee was cheating on the exam.

**Facts:**
An investigation found that:
- The answer sheet was applicable to the material being tested and was out during the examination.
- There was no legitimate reason for having any paper out during the examination.
- The employee admitted to having answers to the required test; however, the employee maintained that the answers were only used to be used if the employee could not answer a question.
- The employee’s behavior was dishonest and inappropriate.

**Resolution/Discipline:**
The examination was redesigned and will be changed on a more frequent basis. The Ethics Office suggested that someone ensure that no study material or paper be allowed in the room to help prevent the perception of or temptation to cheat. The long service employee received 30 days off without pay.

**Nobel laureate Murray Gell-Mann to speak at National Museum of Nuclear Science and History**

Nobel laureate Murray Gell-Mann will be presented the National Award of Nuclear Science and History at the National Museum of Nuclear Science & History's Einstein Society Gala at the Sheraton Uptown Hotel Saturday, March 20. Gell-Mann was awarded the Nobel Prize for Physics in 1969. The museum award recognizes his many contributions to the theory of fundamental particles, including the existence of quarks, the tiny subparticles from which just about everything is made. In his distinguished career he worked alongside many other legendary figures of nuclear science and history, including Albert Einstein, J. Robert Oppenheimer, Enrico Fermi, and Richard Feynman, among others. Ticket cost is $125. For more information, contact the museum at 245-2137, extension 110, or go to the museum website at http://www.nuclearmuseum.org.
This month in the past

50 years ago . . . "Project Cowboy" Over — Sandians played a large part in "Project Cowboy," a series of high-explosive tests to study seismic effects recently conducted in a salt mine near Winnfield, La. Personnel from both Sandia and Livermore laboratories participated. Data gathered from the tests will aid in determining the effectiveness of the proposed Geneva system of detection of underground nuclear explosions as part of an international nuclear test ban treaty. Bill Long (8123), Livermore Laboratory, at the request of the Lawrence Radiation Laboratory, accompanied a team from that laboratory on a pre-operational site survey of the Chariot Site near Cape Thompson on the northwestern coast of Alaska. The site is being considered for an excavation experiment using nuclear explosives. It is part of Project Plowshare, the name given to the peaceful uses of nuclear detonations.

40 years ago . . . A new carbon dioxide laser is the basis of a new materials research program. The laser produces a steady 250 watts of infrared radiation that can be focused onto an area smaller than a square millimeter. When the laser is focused on refractory ceramic-type materials, they melt or vaporize. This suggests a new way to form nuclear fuels, permits studies of crystallization from supercooled melts, casts light on the origin of meteorites and the moon, and will soon be used to determine thermal properties of materials at very high temperatures. A novel test facility capable of simulating impact conditions for a vehicle dropping at a rate of 900 feet per second has been designed and is now being used by the Coyote Test Field Division 7343. Called the Aerial Cable Site, the facility makes use of a couple of mountains, a mile or two of cable, some bent steel pipe, a short single rail rocket sled — and considerable imagination. The cable facility combines the knowledge of the precise location of impact so that cameras or other recording equipment can be trained on the target and velocities matching those of a unit dropped from high altitudes.

30 years ago . . . Tests on a three million-watt (thermal) solar receiver panel have been successfully completed at Sandia’s Central Receiver Test Facility (the Power Tower). The 3-bf-45-ft, panel, consisting of 70 parallel tubes made of high-strength steel alloy, was illuminated with 2.7 megawatts of thermal energy from the facility’s 222 heliostats. Water circulated through the tubes was converted to steam at 960°F and 1,500 psi by heat from sunlight focused upon 10 aim points along the length of the panel. Two experimental drag bits, fitted with man-made polycrystalline diamond cutters, are showing significant improvements in drilling rates over conventional roller cone and natural diamond bits. The bits were tested by Sandia in a geothermal well in northern New Mexico.

20 years ago . . . "Dependable workers, but not too bright." That could describe some types of industrial "workers" today — not human workers, but industrial robots used on automotive assembly lines and in other mass-production situations. A new generation of "smart" robots is being developed, however, and Sandia has become a leader. "This new generation of robots will have tremendous potential," says Pat Eicher, manager of Computer Sciences for a vehicle dropping at a rate of 900 feet per second.

"smart" robots is being developed by Sandia scientists. The dime-sized device, called a biological microcavity laser, should help surgeons more accurately cut away malignant growths while minimizing the amount of healthy tissue removed. In effect, the patented device would tell the surgeon when to stop cutting. The Multi-spectral Thermal Imager (MTH), the product of Sandia’s first full satellite development program, was successfully placed into orbit early Sunday morning, March 12, by a Taurus rocket launched from Vandenberg Air Force Base, Calif. By Monday morning, March 13, operators in Sandia’s ground control station had reported that the satellite appeared to be in good working order after four passes over Albuquerque.

DANGEROUS JOB — An instrumentation package developed by Sandia enables this robot to develop a 3-D map of a simulated underground waste repository.

TIME-EXPOSURE PHOTOGRAPH of MTI being blasted into the night sky. (Photo by Dana Helgeson, 1541-9)

A spray of molten droplets produced when spinning rod of aluminia ceramic is melted by infrared energy from a carbon dioxide laser.

HOT STUFF — A solar panel glowing under impact of 2.7 megawatts of thermal energy.
By Rebecca Ullrich, Sandia Corporate Historian

Women’s History Month had its start in 1978 as Women’s History Week in Sonoma County, Calif. A 1981 joint Congressional resolution declared the week, including March 8 (International Women’s Day), Women’s History Week. The week was expanded to a month in 1987.

March is Women’s History Month, in which we celebrate International Women’s Day (March 8) — acknowledging working women’s contributions to history and their changing roles in culture over time. In this issue, we pay tribute to a few of the remarkable women who were pioneers in technical work at the Labs.

Early women scientists and engineers at Sandia were heroic, brave, determined

KATHERYN LAWSON, a PhD scientist, was hired in materials research, conducting spectroscopic studies analyzing the molecular structure of irradiated materials. Katheryn was hired by Sandia in 1958. She was the first female engineer at Sandia/California. Fifteen years later, in the wake of the 1960s press for equal rights and the growth of the women’s movement, as well as economic pressures driving women into the workforce in ever greater numbers, Joan Woodard was one of only three female members of the technical staff at Sandia/California when she hired in. Ultimately, Joan became Sandia’s second female V9 and first female executive vice president.

Mary Jo Vaughn started at Sandia in 1949 with a BS in mechanical engineering from the University of New Mexico, Katheryn was hired by Sandia in 1958 — two years before four African-American college students sat down at a segregated lunch counter at Woolworth’s in Greensboro, N.C., kicking the modern civil rights movement into high gear among America’s youth. She was hired as part of Sandia’s push to bring in more PhD scientists to advance weapon design, like most of them, she was in materials research, conducting spectroscopic studies analyzing the molecular structure of irradiated materials.

Diane Holdridge, who later worked with Jim Davis in factoring large numbers using an early Cray computer (they successfully factored the 69-digit Mersenne number in 1983), forged her own path early. In college, she replaced two classes on her advisor-assigned schedule with algebra and piano lessons, and “from then on I just went without an advisor.” She studied secondary education, “because I didn’t know this job existed.” She learned to program at Sandia, developing her skills as the machines evolved. She retired from Sandia in 1990. Opportunities for women in both management and technical staff positions have increased over time, the way paved in part by women like these who grasped expertise in heat transfer studies. She worked with component designers to establish test parameters and programmed the thermocouple computer to run the tests. She continued in fluid mechanics and heat transfer after the thermalog was gone, became involved in the early New Mexico Network for Women in Science and Engineering in the 1980s, and retired in 1985.

Katheryn Lawson is an exemplar of the determination sometimes required of these pioneers. An African-American woman with a PhD in physical chemistry from the University of New Mexico, Katheryn was hired by Sandia in 1958 — two years before four African-American college students sat down at a segregated lunch counter at Woolworth’s in Greensboro, N.C., kicking the modern civil rights movement into high gear among America’s youth. She was hired as part of Sandia’s push to bring in more PhD scientists to advance weapon design, like most of them, she was in materials research, conducting spectroscopic studies analyzing the molecular structure of irradiated materials.

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