

Sandia's homegrown Xyce software gains notice in world of modeling electrical circuits

Xyce ran the largest analog full circuit simulation ever in May experiment

By Chris Burroughs

Sandia's homegrown four-year-old Xyce™ software is gaining notice in the world of modeling electrical circuits.

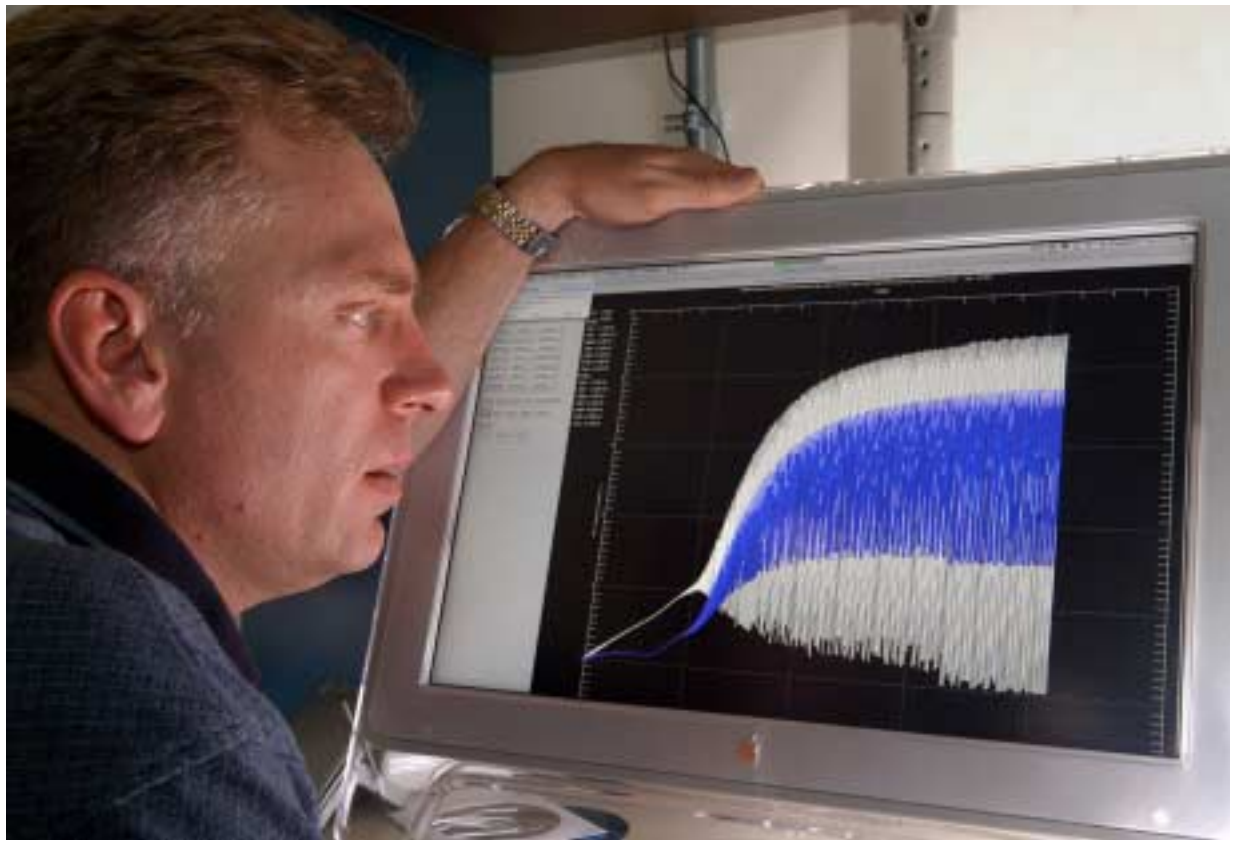
Late last month the electric circuit simulation code ran a 14,336,000-analog-device problem, using 1,024 processors of Lawrence Livermore's ASCI (Accelerated Strategic Computing Initiative) White IBM computer. It is believed to be the largest analog circuit simulation ever done, and it was conducted on the largest number of concurrent processors ever used for circuit simulation.

The accomplishment was part of a scaling study in support of an ASCI milestone, and the developers are convinced they can build a simulation code that can model even faster.

An interdisciplinary team from Depts. 9233, 8205, and 1734 began work on Xyce in July 1999 to develop an electrical modeling code that better meets Sandia's needs. Currently, Sandia's circuit simulation community relies mainly on a commercial code, PSpice (note the rhyming with Xyce), which operates sequentially, and hence, not as rapidly for large-scale circuit problems. Furthermore, Xyce gives Sandia the ability to simulate circuit problems of unprecedented size.

"We had our specific needs — like some of our device models have to support environmental effects [e.g., radiation], which no commercial cir-

(Continued on page 4)



SCOTT HUTCHINSON studies a computer simulation of a voltage waveform from an oscillator circuit.

(Photo by Randy Montoya)

Happy birthday SSTP



Five years and 14 tenants after its first groundbreaking, Sandia Science and Technology Park, a unique public/private economic development initiative based just outside the Eubank gate in Albuquerque, celebrated its fifth anniversary. See story on page 5.

Tool to help Protective Force determine who may enter access points during off-hours

By Chris Burroughs

In the next few weeks a new tool will be provided to Sandia's Protective Force that will allow its members to better monitor who can and cannot enter certain restricted/controlled access points during weekends and off hours.

The ProForce will be able to look up a specific restricted/controlled access point through a computer access program, called Web-enabled Custodian-controlled Access Tool (WebCAT), and verify who is authorized inside the area.

"Right now, in most cases, if the ProForce receives a call to let someone in a controlled lab or into a Q-only hallway, for example, he or she doesn't know if the person is authorized to be there during off hours," says Janet Ahrens, Manager of Electronics Security Dept. 3112. "The ProForce will have to call the building or site manager to find out."

This situation has arisen because of the increased use of card readers throughout the Labs that allow only certain people in restricted/controlled access areas. Since 1996 more than 700 card readers have been installed at main access points to tech areas and in restricted points in buildings. Most of the time when a person swipes to enter a controlled area, he or she is admitted

(Continued on page 4)

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Six-lab nuclear energy action plan has Sandia as systems integrator

Goal: Increase use of nuclear power, hydrogen fuels; reduce waste

By Will Keener

A joint presentation by six DOE laboratory directors in May to Deputy Secretary of Energy Kyle McSlarrow has resulted in a step ahead for a Nuclear Energy action plan, proposed by the group. The plan calls for activities on the part of all six laboratories, with Sandia acting in an integrating capacity, reports Sandia President C. Paul Robinson.

"Basically, we found that we were pushing on an open door," says Paul of the meeting. "The Administration's Energy Plan already emphasizes nuclear energy (based on its competitive costs and zero carbon emissions) and the move to a hydrogen economy for transportation fuels. Our proposal integrates these two."

The action plan suggests an emphasis in some higher temperature reactors that can effi-

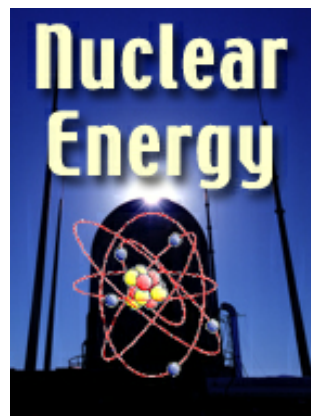
ciently produce hydrogen, Paul explains. "Thus we can speed the time to transition." McSlarrow told the gathered group of laboratory representatives that the White House may also want to review the ideas in the action plan.

Last summer Sandia joined with Argonne, Idaho National Engineering and Environmental, Oak Ridge, Lawrence Livermore, and Los Alamos national laboratories in signing an agreement aimed at enabling nuclear power to play a global role in the 21st century. The action plan, which sets out specific dates and goals, is a product of that agreement.

"Sandia has offered to the rest of the labs our experience and expertise as 'system integrators' for this effort," Paul says. Each lab in the partnership has expertise in particular areas of

nuclear technology that it will bring to the table, Paul adds, "but we thought that what was most

(Continued on page 6)



3

Truman lecture by WSJ reporter Carla Robbins touches upon US role and image overseas

6

Sandia, Kurchatov laboratory directors sign MOU to advance nuclear energy, related technologies

This & That

Recycled columnist - It's me, Larry Perrine, back writing this column on a one-time basis while Howard Kercheval is on vacation, sailing around the Caribbean with a boat load of gin and tonic, looking for that special "lucky woman."

I suppose I shouldn't kid ol' Howie about this since he has such a difficult time meeting women - at least respectable women. I have tried to help the man, telling him he's not successful because - like the country-western song goes - he's probably "looking for love in all the wrong places." I told him he should try places where he has a fighting chance - senior citizen bingo parlors, for example.

* * *

Staff sacrifices - As a former *Lab News* editor (1989-95) and columnist, I sacrificed tremendously to keep you readers satisfied, well-informed, and happy - even though very few of you ever showed appreciation with nice gifts during editors and writers week.

I acknowledge, though, that my sacrifices pale in comparison to those being made now by my successor, Ken Frazier, and the entire *Lab News* staff. I don't know if you noticed, but this issue and the last one in May have been printed on better, brighter paper, and that will continue. Ken and his staff are too modest to brag about this, but I feel they deserve some credit for what they are doing - foregoing any salary increases for the next three years so you readers can enjoy your Sandia news and photos on better paper. What an unselfish bunch! I hope you'll remember all of them this year during editors and writers week.

* * *

What's "What's What?" - I resurrected the column title I used - "This & That" - for my return engagement because I never quite grasped the meaning of Howard's "What's What" title. "This & That" on the other hand clearly indicates what my columns were about - a little bit of this mixed with a little bit of that. I sometimes put in more this than that, but never hesitated to use more that than this if necessary. Maybe Howard will explain to us all sometime what "What's What" really means. Maybe not. Maybe even he doesn't know. Maybe no one cares. Whatever.

* * *

A good question? - As I'm sitting here composing this vital crappola, I'm also eating lunch at my desk. (I believe that's called multitasking.) Anyhow, since part of my lunch is a small hunk of blue cheese, I couldn't help wondering how the heck you know when blue cheese goes bad? Does it smell bad and get moldy. No, that couldn't be it because it's already moldy and smelly. Somebody help me.

* * *

Difficult promise to keep - When Editor Ken found out that Howard asked me to sub for him this issue, Ken told me times have changed since I last wrote this column and that it was no longer OK to poke any fun whatsoever at Sandia VPs or directors. He said I couldn't even razz Jim Rice (2500) about his "creative" golf swing or how he looks in golf shorts. I agreed, but this column-writing business isn't as much fun as it used to be! Hurry back, Howard.

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

Becky Krauss promoted to VP, General Counsel, and Corporate Secretary

Elizabeth (Becky) Krauss has been promoted to Sandia Vice President, General Counsel, and Corporate Secretary.



BECKY KRAUSS

Becky joined Sandia in 1994 as an attorney. She was promoted to Senior Attorney in 1999 and to Deputy General Counsel and Assistant Corporate Secretary in 2001.

Before joining Sandia, Becky practiced law from 1988 to 1994 with a Connecticut law firm, Wiggin & Dana, where she specialized in environmental law.

Becky manages all legal activities at all levels of government involving Sandia National Laboratories and Sandia Corporation in areas that impact a large, multi-state business.

She manages Sandia's Legal Division (Org. 11000), comprising 12 attorneys, legal assistants, and support staff. She provides legal counsel and advice on multiple aspects of general corporate law, government law, and DOE M&O contractor issues. Becky supervises legal activities in the areas of environment, safety, and health; taxes, pensions, and benefits; labor relations; personnel and EEO; security; fraud, waste, and abuse; workers' compensation; procurement; intellectual property; and all aspects of litigation.

As Corporate Secretary, Becky is responsible for all matters concerning Sandia's Board of Directors and corporate status. She manages all matters presented to the Board of Directors including pensions and benefits, employee compensation, and election of Sandia officers.

She is affiliated with the Lockheed Martin Senior Assessment and Development Institute and the Lockheed Martin Legal Leadership Institute and is a member of the Department of Energy Contractor Attorneys Association, the American Bar Association, and the American Corporate Counsel Association.

Becky received a BA in history from Connecticut College and a JD from Boston College Law School. She is a member of the Connecticut and New Mexico state bars.

Employee death

Rebecca Rosten of Systems Technologies Dept. 15272 died May 28 after a five-month battle with cancer.

She was 45 years old.

Rebecca had been an Office Administrative Assistant at the Labs since 1989.

She is survived by her mother Donna Rosten, sister Ann Kulju, and brothers Mike Rosten and John Rosten.

Retiree deaths

Howard W. Schmalle (age 87)April 30
 Ben Jojola (80)May 1
 Harlan E. Lenander (85)May 3
 Derrell D. Dollahon (78)May 5
 Joanna B. West (77)May 5
 George S. Bennett (83)May 7
 Jose G. Martinez (86)May 7
 Helen M. Bond (81)May 10
 Marold K. Turpin (78)May 10
 Nick J. Kasnic (91)May 16
 Charles R. Barncord (83)May 22
 William M. O'Neill (90)May 22
 Yale Hamilton Knox (76)May 24
 Thomas E. Latta (73)May 24
 Mildred E. Mellen (85)May 27

Sympathy

To Sharon Blauwkamp (9120) on the death of her daughter, Bria Blauwkamp, May 5.

Sandia LabNews

Sandia National Laboratories

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Recent Patents

Ronald Guidotti (2522): Batteries Using Molten Salt Electrolyte.

John Brainard (2564) and Robert Koss (2112): Anode Initiated Surface Flashover Switch.

Barney Doyle (1111): Ion Photon Emission Microscope.

Clark Dohrmann (9124), Samuel Key, and Martin Heinstein (both 9142): Method and Apparatus for Connecting Finite Element Meshes and Performing Simulations Therewith.

Lyndon Pierson, Edward Witzke (both 9336), and Joseph Maestas (9334): Bit Error Rate Tester Using Fast Parallel Generation of Linear Recurring Sequences.

William Sweatt and Todd Christenson (both 1743): Optical Switch Using Risley Prisms.

Kevin Zavadil (1832), Judith Ruffner (14172), and Donald King (6424): Low Work Function Materials for Microminiature Energy Conversion and Recovery Applications.

Michael Sinclair (1851), Maarten DeBoer (1762), Norman Smith (1762), Brian Jensen (L&M Technologies), and Samuel Miller: Method and System for Automated On-Chip Material and Structural Certification of MEMS Devices.

Arthur Fischer, Weng Chow (both 1123), and Kent Choquette: Coupled-resonator Vertical-Cavity Lasers with Two Active Gain Regions.

Anthony Bentley (2338), J. Bruce Kelley (6245), and Fred Zutavern (15333): Closed Loop Control of the Induction Heating Process Using Miniature Magnetic Sensors.

Truman lecture touches upon US role, image overseas

Wall Street Journal correspondent **Carla Robbins** speaks on 'America as Guardian and Bully'

By Nancy Garcia

Carla Anne Robbins, chief diplomatic correspondent at the *Wall Street Journal*, shared her perspective on world events as the most recent Truman Distinguished Lecturer in a talk entitled "America as Guardian and Bully."

Speaking of those two disparate appearances, she said, "We're not going to be popular, but we don't have to be hated. . . . I think the word 'guardian' is a very great thing and I'm very proud of my country, but I worry that people only see the bully side of it as a country that sometimes goes it alone."

In her view, our country has the unique

Sandia CaliforniaNews

responsibility of raising issues and promoting values. For instance, she said, "We decided that genocide in the late 20th century was wrong in Central Europe. . . . We look all-powerful but also incredibly insular. Other countries don't understand what we do — even when we're right — making us look either capricious or downright selfish. We look untouchable even though we feel insecure ourselves. The burden is on us to explain ourselves to the world."

Making our global responsibilities better understood also becomes a national security



VP MIM JOHN introduces Truman Distinguished Lecturer Carla Anne Robbins.

issue, she added. "Too many people in the world, mainly in the Middle East, feel our power is so limitless that the only real way they feel they can get our attention is to go down this road of craziness. . . . The rest of the world does not understand us and we have to listen to people's fears and concerns. . . . We are seen as strongly allied with dictators, many of whom are oppressive and deny human rights."

On the flip side, US foreign policy interests may not always be supported in nationalist-leaning democracies, she added, where "not everyone votes the way we want. . . . I think the challenge is learning to build consensus. I don't want us to solve every problem through military force."

Robbins confessed that she was, as a private citizen outside the dictates of objectivity in her job, a hawk on Iraq. Calling the Middle East a "petri dish of terrorism," she said "our biggest challenge is to manage that region so it can be a better place."

The audience seemed engaged by her broad perspective. "She certainly knew the context and didn't say it was easy," says Pat Falcone, Manager of Systems Studies Dept. 8114. Pat says she appreciated Robbins' allusion to these issues in which the speaker said that "it's not our fault, but it is our problem."

Likewise, Carolyn Pura, Manager of Exploratory Systems Dept. 8120, enjoyed hearing the blend of Robbins' appreciation for the usefulness of maintaining a nuclear stockpile coupled with her concerns about the spread of nuclear material. "It was very positive to hear a thoughtful view on that, especially from the press," Carolyn says.

In response to a question by Government Relations Manager Ron Stoltz (12122) about who can bring consensus within our country,



WORLDVIEW — The *Wall Street Journal*'s Carla Robbins talked about the dual image of the US as a protector and antagonist when presenting the latest Truman Distinguished Lecture. She also attended briefings for the balance of the day.

"Too many people in the world, mainly in the Middle East, feel our power is so limitless that the only real way they feel they can get our attention is to go down this road of craziness."

Robbins said she believes the president has explained the threat well but could do better at explaining our responsibilities.

Overall, John Hinton (8114), who helped organize her visit (which included technical briefings throughout the day), remarked that her talk was "quite provocative and energizing."

An audience member pointed out that dominant powers have been unpopular throughout history. Robbins drew a distinction, saying, "We are not a colonial power. . . . We are not there to make the world safe for Bechtel or Halliburton."

Robbins has a PhD in political science from UC Berkeley and writes about diplomacy, defense, and national security issues from Washington and overseas. Prior to joining the *Journal* 10 years ago, she covered Latin America, the first Gulf crisis, and the State Department for *U.S. News & World Report*.

Your thoughts, please

'Your Thoughts, Please' invites you to SWOT Sandia

Increasingly entire companies, groups within companies, or individuals interested in improving themselves are conducting "SWOT analyses." S = strengths. W = weaknesses. O = opportunities. T = threats.

The currently posted question on the web-based "Your Thoughts, Please" employee comment feature asks Sandians to offer a quick SWOT analysis of the Labs.

Analyses — no more than 300 words — are welcome through July 1. Simply click on the site (<http://www-irn.sandia.gov/newscenter/news-frames.html>), which is near the top left of The NewsCenter.

The site also contains employee responses to the previous question, which queried Sandians about signed versus unsigned contributions to "Your Thoughts, Please."

Feedback

Why so many long, annoying surveys?

Q: Why do departments at Sandia send out such long, annoying surveys? I understand the importance of customer focus and wanting to know what people like and where improvements could be made. Surveys can be a valuable tool, but let's be reasonable.

I did not respond to the two most recent surveys I received because one was six pages long and the other four pages long, both with a dizzying number of checkboxes. Are there any corporate guidelines for surveys? Is there a resource at Sandia who could assist in survey design?

A: Boy, do we agree. And, yes, there are corporate guidelines coming. In fact, we're a few weeks away from publishing a standard for customer surveying within the IES (Sandia's infrastructure services, aka Integrated Enabling Services) that provides both guidelines and help with survey design.

Most service providers are very concerned about focusing on the customer — which is good. A common way of getting customer feedback is by surveying — which, if not done reasonably, can

annoy them. The new standard will require a review by a team of individuals prior to the distribution of a survey by any of the IES service providers. The team, which includes a staff member from Sandia's Reliability and Human Factors Group with excellent insights into survey design, will focus on length, appropriateness, type of questions asked, overlap with other surveys, etc. In addition, the standard will include guidelines that identify other tools that the service provider can use to determine how well customer expectations are being met without necessarily using a customer survey. Sometimes, we ask questions for which we already have answers.

You are right to say surveys can be valuable tools if used right. They can provide the service provider with information to make decisions to improve service to the customer. We hope this new standard will eliminate unnecessary surveying, while providing a structure and process for those service providers that do need to use surveys. Thanks for the input. — Lynn Jones (7000)

Xyce software

(Continued from page 1)

cuit simulator supports," says Scott Hutchinson (9233), technical lead. "Also we needed a simulation code that ran faster."

The team determined that SPICE-based codes with enhancements could not meet Sandia's needs for parallel computing.

So they created Xyce, a parallel code in the most general sense of the phrase — a message-passing parallel implementation that allows it to run efficiently on the widest possible number of computing platforms, including serial, shared-memory, and distributed-memory parallel as well as heterogeneous platforms. Also the team paid careful attention to the specific nature of circuit simulation problems to ensure that the optimal parallel efficiency is achieved even as the numbers of processors grow.

"Xyce is still maturing and is in the early development stage" says Sudip Dosanjh, Manager of Computational Science Dept. 9233. His



department consists of experts in algorithms, numerical methods, code development, and electrical engineering.

Version 1.0 was first released in October 2002. A second version, 1.1, was released last week. Xyce 2.0 will be released in October 2003. Since version 1.0, Scott and his team have made 68 "bug-fixes" and enhancements.

Xyce provides a modern, in-house simulation tool on which to build future enhancements targeted at the design and analysis needs of Sandia's electrical design community.

The fast modeling of electrical circuits is useful in two ways. First, it gives engineers a leg up in designing electrical devices. They can start with an initial design created through the simulation that they can build and improve on — saving a lot of time in the design phase. It will provide a circuit-modeling tool capable of running efficiently on high-performance parallel computers using state-of-the-art algorithms. Second, modeling can be used to analyze existing circuits to determine if they are functioning correctly. Currently there are 10 Sandia users of Xyce.

Xyce is the main code of a larger project, High Performance Electrical Modeling Simulation (HPEMS), funded primarily by DOE's ASCI Application program. Among HPEMS' goals are to support Sandia-specific circuit models, include a consistent designer interface, produce an efficient

HEMPS Project statement

Xyce™ is a part of the larger High Performance Electrical Modeling and Simulation (HPEMS) project at Sandia. It has the following statement:

With the elimination of underground nuclear testing and declining defense budgets, science-based stockpile stewardship requires increased reliance on high-performance modeling and simulation of weapon systems. Electrical systems and components are major elements in today's weapon systems. The present electrical modeling and simulation capabilities are very limited and will be significantly expanded by using massively parallel computational resources. Our vision is to accurately characterize nuclear weapon electrical systems from first principles in all environments over a 50-year lifetime. The goal of this project is to provide the tools that will allow the use of massively parallel modeling and simulation techniques on high-performance computers in existing and future nuclear weapon electrical systems models.

Steve Wix (1734), the project leader for HPEMS, has taken a temporary assignment at DOE. Carolyn Bogdan (1734) is taking over his responsibilities for HPEMS.

parallel implementation on a variety of architectures, and implement improved, scalable algorithms that address SPICE convergence problems.

"Xyce has been a great collaboration between Centers 1700, 9200, and 8200," says Steve Wix, project leader for HPEMS. "Centers 1700 and 8200 provide expertise in device models and applications while 9200 has provided expertise in numerical methods and computational science."

To illustrate how far electrical circuit computing has come in four years, Scott compared what could be done then and what can be done now.

"In 1999 it took 233 hours to simulate 79 circuits on a Pentium multiplier," Scott says. "Today on the faster hardware and running parallel it would take one hour."

Feedback

How to get answers to your tough questions

Sandia's Feedback Program, established in 1973, is designed to facilitate both upward and downward communication at the Labs. The program enables employees to question policies or procedures and point out areas of discontentment. Feedback allows upper management to complement line management's role by answering difficult and sensitive questions, learn what employees want or need, obtain suggestions for making improvements, and determine if policies and procedures need changing. The submitter's identity remains confidential, known only by the Feedback program administrator unless the submitter specifically asks to be identified with the question.

All employees, regular, part-time, limited-term, student interns and retirees are eligible.

To submit a question to Feedback, go to internal Sandia home page, click on the Newscenter button located at the top right corner, then scroll down and click on the Feedback bar and complete the electronic submittal form or keyword Feedback on the Sandia Yellow Pages.

Feedbacks can also be sent to the Feedback administrator via fax, e-mail, or through the company mail. If the submitter does not include a name with the submission, there will be no response, which is otherwise guaranteed. The identity of the submitter is never disclosed unless he or she specifically requests.

For more about Feedback process, see the Web page at <http://www-irn.sandia.gov/corp-data/feedback/fbfactsheet.html>.

Xyce team members

The following team members have all contributed to the development of Xyce™: Becky Arnold (6536), Carolyn Bogdan (1734), Steve Brandon (8205), Todd Coffey (9214), David Day (9214), Ray Heath (1734), Mike Heroux (9214), Scott Hutchinson (9233), Rob Hoekstra (9233), Eric Keiter (9233), Ken Marx (8205), Tamara Kolda (8962), Roger Pawlowski (9233), Eric Rankin (9233), Thomas Russo (1734), Dave Shirley (9328), Smitha Sam (6536), Regina Schells (1734), Michael Williamson (6536), Lon Waters (1734), Steve Wix (1734) and Edna Wong (9233).

WebCAT

(Continued from page 1)

immediately. But there are those few instances — maybe 12 a day on a weekend — where access is denied by the reader.

"As the technology of access control is changing and modernizing, it has been harder and harder for ProForce to make on-the-ground decisions as to when or where to give key service to individuals needing or claiming to have

restricted/controlled access point to keep their own access lists current until the advent of WebCAT.

"WebCAT made the phenomenal growth in badge readers possible in just the past two years," Nancy says. "And we're not done yet. We get requests every day for installations of badge readers on office spaces and laboratories."

One issue that WebCAT does not fix, however, is that of Sandians working weekends and off-hours who exit buildings through alarmed doors. Many doors at Sandia generate alarms when used after hours. However, those doors

"As the technology of access control is changing and modernizing, it has been harder and harder for ProForce to make on-the-ground decisions as to when or where to give key service to individuals needing or claiming to have access to an area controlled by a badge reader."

access to an area controlled by a badge reader," says Nancy Aldridge (3112), WebCAT coordinator. "Therefore, we decided to give them an additional tool, which is a dynamic read-only web page that will show them that an individual is on the WebCAT access list for an area and may be given key service if his or her badge is valid but the reader for some reason is not working. The page is drawn on command from WebCAT's information."

WebCAT is an application that has been in place since June 2001. It is a software bridge between the Badge Office software, BadgeWorks, and the hardware of the badge reader system, Infographics. This software bridge allows the people who own an "area," such as an office suite or a laboratory, to control the badge reader that leads into their areas. The technology of access control has been available for a while but there was no practical way for an owner of a

with card readers most often have an additional motion sensor over them that gives people a few seconds to exit before an alarm is sounded. But some buildings do not have sensors over all doors, particularly in buildings where there are two, three, or four front doors. If an exiting employee goes through one of the unalarmed doors, the alarm will sound and the ProForce must respond to the site to make sure everything is secure.

"We ask that employees who work weekends and off hours know which doors have sensors over them and which don't — usually they should try to exit the door that the card reader unlocked when they came in," Janet says.

"Most buildings have a building representative or a LIWG [Line Implementation Working Group] representative who can help answer questions. If there is any doubt — it is always best to call to report that you are exiting" (844-4657 for North or 845-3114 for South).

Sandia Science and Technology Park marks five years of growth; optimistic about next five years

By Bill Murphy

Sandia Science and Technology Park: Five years and an empty field ago, it was just an idea. Today, in the wake of its inarguable success, it's hard to avoid the overused but sometimes useful cliché, "If you build it they will come."

Last week SSTP, the public/private economic/land development project just outside the Eubank gate, celebrated the fifth anniversary of its first groundbreaking. On a windy day in May 1998, EMCORE Photovoltaics, with just two Albuquerque-based employees at the time, turned dirt on its first facility at SSTP.

All of the "usual suspects" (as Sen. Jeff Bingaman on another occasion called the dedicated cadre of economic development boosters who always show up at groundbreakings) were there. High-falutin' words were spoken. Perhaps a high-five or two was exchanged. But despite lots of optimism, no one could be sure that the SSTP vision — a vision originating with then-Sandia VP Dan Hartley (ret.) and embraced by community, business, and elected leaders and by Lockheed Martin — would ever really materialize.

SSTP Executive Director Jackie Kerby-Moore, emceeding the anniversary celebration June 5, took special note of Dan's contributions. "He is truly the visionary behind this," she said. "Without his efforts and his leadership we wouldn't be here today."

Now, five years later, the answer is in. The numbers do the talking:

- 14 tenants in several major facilities, with a new building under construction.
- 600 people employed directly in almost 300,000 square feet of occupied space, with an

14 tenants at SSTP . . . so far

- EMCORE Photovoltaics
- EMCORE Optical devices
- EMCORE Fiber Optics
- Team Specialty Products
- Applied Technology Associates
- Control Metrics
- CSA Engineering
- Analytical Solutions
- Training Solutions
- International Programs Building
- Sandia Laboratory FCU
- La Luz Early Childhood Center
- Sandia Materials Processing and Coatings Laboratory
- SSTP program office
- . . . and coming soon: Ktech Corp.



NEW NEIGHBOR — Ktech Corp.'s new 80,000 sq. ft. facility is under construction at the corner of Eubank and Gibson SE in the Sandia Science and Technology Park. Ktech, a strategic Sandia supplier, joins 14 other tenants that have chosen to call SSTP home over the past five years. Ktech plans to occupy the new facility in November.

"I don't think there's any doubt that in the next five years, there will be more jobs created on this 200 acres than on any other 200 acres in the State of New Mexico."

additional 1,700 indirect jobs created.

- \$161 million increase in taxable consumption on goods and service, including more than \$8 million in gross receipts tax revenues to the State of New Mexico and another \$600-plus thousand to the city of Albuquerque.

- Average salary of \$45,000 for each full-time job created in the SSTP, compared to a citywide average of \$31,000 per full-time job.

While the Park has grown dramatically over the past five years, EMCORE, which now operates three enterprises focused on photovoltaics, optical devices, and fiber optics, remains the park's anchor.

In a prepared statement, EMCORE Executive VP Scott Massie said: "Our products have been built on the technologies and intellectual properties developed at Sandia National Laboratories. We appreciate the strategic partnership with the Labs on technology commercialization. EMCORE is proud to be in Albuquerque and committed to expanding our future business in the Park."

Bob Sachs, president of SSTP tenant company Team Specialty Products, also in a prepared statement, called his company's decision to move to SSTP "one of the best business decisions" it has ever made.

"Since moving into the park two years ago," Sachs said, "our business has more than doubled in a time when most companies have been forced into reductions. We look forward to continued growth in the park."

SSTP Development Corp. Chair-

SSTP partners reflect public/private nature of effort

- Technology Ventures Corporation
- Sandia National Laboratories
- City of Albuquerque
- Albuquerque Public Schools
- BUILD New Mexico
- New Mexico State Land Office
- Lockheed Martin
- Economic Development Administration
- US Department of Energy
- State of New Mexico
- Public Service Co. of New Mexico
- New Mexico Congressional Delegation

man Sherman McCorkle, who, along with Dan Hartley has been credited as an early SSTP visionary and evangelist, spoke at the anniversary celebration with fervor about the Park's success.

"It's amazing what happens when people of good will come together. . . . I don't think there's any doubt that in the next five years, there will be more jobs created on this 200 acres than on any other 200 acres in the State of New Mexico."

Assistant Land Office Commissioner Walter Bradley (representing State Land Commissioner Patrick Lyons at the celebration) said the Park is turning people's expectations about the south end of Eubank on their heads.

"I challenge people," said Bradley, "before you prejudge [the SSTP area as a locale for a new business], open your eyes and see what's going on down here. You're going to see something that no one envisioned." Bradley said he believes public/private partnerships, as embodied by SSTP, are vital if the State of New Mexico is to prosper and grow its economy.

Representing Mayor Martin Chavez, City Chief Administrative Officer Jay Czar said, "Some of us are fortunate in that we get to be involved in magical projects like this. This is truly one of the most synergistic projects of its kind in the US."

Also on hand to lend remarks at the celebration were Sandia VPs Lenny Martinez (14000) and Al Romig (1000). Al said he expects to be back for another celebration before another five years goes by, this time to help EMCORE celebrate when it becomes a Fortune 500 company.

Other speakers included Paula Maes of the Albuquerque Public Schools Board of Education, and Hong Hou, an EMCORE VP.

"It's amazing what happens when people of good will come together."



MAN WITH A VISION — Retired Sandia VP Dan Hartley (center) and his wife Linda were on hand at the fifth anniversary of the Sandia Science and Technology Park. Dan, seen here with VP Lenny Martinez (14000), is credited with being the visionary and driving force behind SSTP, which is now home to almost 600 jobs, with more on the way.

(Photo by Randy Montoya)

Sandia-Kurchatov collaboration begins with small steps

Energy options, trade-offs key to agreement's goal of helping create sustainable, prosperous, stable world

By Will Keener

Sandia researchers and their Russian counterparts are taking the first small steps under a new memorandum of understanding (MOU) between the Labs and the Kurchatov Institute in Moscow. The ultimate goal of these important first steps is to create a world that is more environmentally sustainable, economically prosperous, and politically stable.

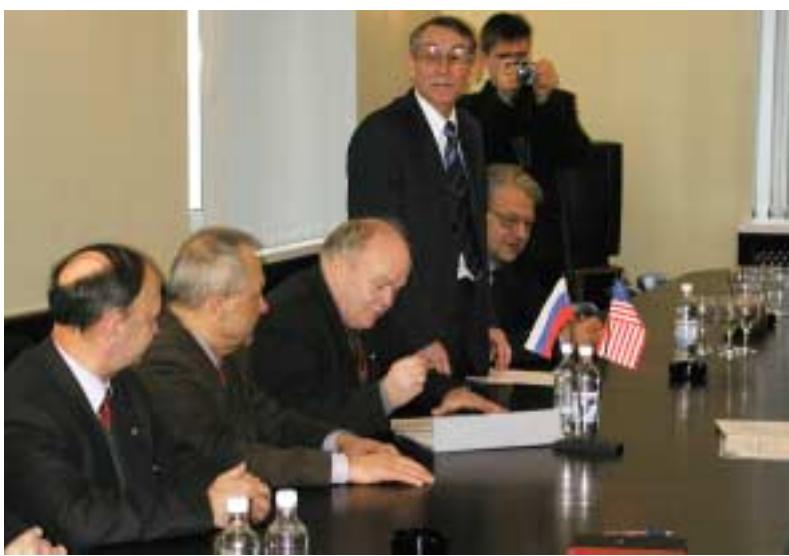
For the researchers involved, the key to reaching this lofty pinnacle is a viable energy underpinning. "Energy is the key," says Bob Eagan (6000), Sandia's VP for Energy, Information, and Infrastructure Surety. "It is woven into the fabric of our global infrastructure." To make a beginning with the Russians, the two labs must be able to help decision makers better understand their energy and environmental options and trade-offs, Bob says. A key piece of that infrastructure is a nuclear fuel cycle that minimizes waste and the likelihood of weapons proliferation at the same time.

The agreement came about following a summit meeting involving US President George Bush and Russian President Vladimir Putin in 2002. Experts from Sandia and Kurchatov produced two white papers following the summit outlining mutual goals for expanding the use of nuclear power.

Proposing similar ideas

With the MOU now in place, the next step will be to expand the partnership to include multilab groups in the US and Russia — an effort that is now also beginning. (See "Six-Lab Nuclear Energy Plan..." on page 1.) An official kickoff visit to Sandia by Evgeny P. Velikhov, President of the Kurchatov Institute, earlier this year brought a number of MOU project leaders together in a video conference.

"The Kurchatov Institute has been proposing similar ideas and looking forward to developing



OPPOSITE SIDES OF THE TABLE, SAME PAGE — Sandia President C. Paul Robinson (top) inks an official memorandum of understanding in this ceremony at the Kurchatov Institute earlier this year. Across the table, Kurchatov President Evgeny Velikhov signs for his laboratory. (Photos courtesy Kurchatov Institute)

technology that could address the burgeoning growth in electric power demand from the underdeveloped nations," says Sandia President C. Paul Robinson. "Thus it appeared that joint collabora-

tions would be an excellent idea and would also further the administration's emphasis on regularizing US relationships with Russia — as allies rather than adversaries."

A potential "storm cloud" on the horizon could impact some of the Sandia-Kurchatov work, warns Paul. Russia's continuing plans to supply a reactor to Iran could put some of the nuclear energy aspects of the collaboration in jeopardy. The US view of Iran's efforts to secure a nuclear reactor is that the nation's primary goal is proliferation of weapons rather than power generation, Paul says. (Iran's price for oil is currently less than \$1 per barrel delivered, a fact that would argue the nation has little need for a nuclear power reactor at present.)

It is likely that economic modeling, fusion, and "back end" joint projects could continue even if direct nuclear energy collaborations do not, however. Here is a *Lab News* summary of some of the work currently under way:

Energy/Economy/Environment

Sandia Chief Economist Arnie Baker (6010) initially met several of his Kurchatov counterparts last year during a visit in Moscow. "We've exchanged initial concepts and held our first modeling video conference. We're now in the process of setting up technical meetings back in Moscow to brainstorm alternative approaches and begin to flesh out a work program," he says. Initially, Arnie expects the focus of model-building efforts to be on Russia, rather than the broader Commonwealth of Independent States. "There's a lot going on there and they need tools to make better-informed strategic energy/economic/environmental decisions."

An example is the question of what direction Russia should take in building new power plants. Coal? Natural gas? Nuclear? During his visit to

(Continued on next page)

Nuclear future

(Continued from page 1)

needed was an impartial system integrator that could serve as the honest broker to build the pieces — only as appropriate — into a system solution."

The other lab directors have accepted Sandia's proposal to serve in this role, Paul reports.

The action plan outlines three major goals to achieve the vision of global expansion of nuclear energy systems:

- The first goal is to reduce air pollution and improve global climate by increasing the use of nuclear power. Among the objectives are 50 percent of US electricity produced by nuclear power and 25 percent of US transportation fuels produced by hydrogen by 2050.

- A second goal is to achieve a 90 percent reduction of reactor waste requiring repository disposal by 2050. Objectives include demonstration of a "closed" (more efficient) fuel cycle system by 2020 in a pilot facility and use of the new fuel system with an advanced reactor.

- A third goal is to reduce the threat of nuclear weapons proliferation while expanding nuclear technology worldwide. To achieve this, the plan calls for development and demonstration of affordable technologies and safeguard systems to minimize proliferation risk.

The laboratory directors told McSlarrow that a number of near-term actions are needed to enable the vision. These include:

- incentives for deployment of new

nuclear power plants in the US.

- demonstration of an advanced "Generation IV" reactor to support both electrical generation and hydrogen production.

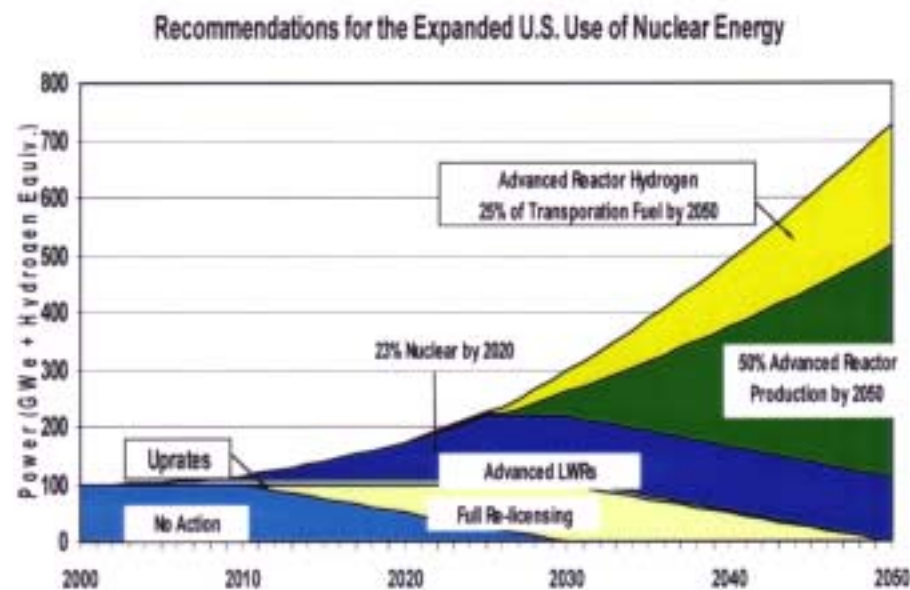
- acceleration of the initiative to develop a closed fuel cycle that will be economically, socially, and politically sustainable.

- setting a world standard for proliferation prevention.

The third (nuclear proliferation) goal in the action plan presents a key opportunity for Sandia, says Tom Sanders, Manager of Global Nuclear Futures Dept. 6020.

"By developing a smart fuel cycle, we can take advantage of advanced manufacturing, robotics, and automation to create additional data at a nuclear plant that can assess the intent of the facility in terms of uses of materials," Tom says.

Recognizing this, Sandia embarked on two Laboratory Directed Research and Development projects two years ago to develop risk-informed proliferation assessments and transparency sys-



EXPANDING DEMAND for electrical power and transportation fuel by 2050 (right) can be met with nuclear power production from advanced reactor types (green) and hydrogen (yellow), according to the vision of a six-laboratory consortium working on the problem. Benefits include 3 billion ton reduction of carbon dioxide and a 2 billion barrel annual cut in US oil consumption. Plutonium available for weapons would also be reduced by 50 percent and reactor wastes requiring a permanent repository would be cut by 90 percent.

tems for reactors, he adds.

The price tag for the 2003 to 2008 action plan is less than \$10 billion. "The benefits of this investment to US energy security, environmental quality, and national security are substantial," the report concludes. "The directors of the DOE national laboratories remain fully committed to supporting the accomplishment of these goals."



WATER, WATER EVERYWHERE . . . and perhaps drinkable, thanks to new desalination technologies — including use of nuclear power for thermally driven desalination — that may be part of research embraced in a Sandia/Kurchatov memorandum of understanding. *Lab News* photographer Randy Montoya took this photo near Point Reyes in California.

Sandia-Kurchatov

(Continued from preceding page)

Albuquerque, Velikhov told Sandia researchers that Russian agencies “need to have a real understanding of why nuclear power is so important.”

By extending Sandia-developed models to Russia and other former Soviet republics, it’s possible to demonstrate cost trade-offs of the different power plant options, Arnie says. “It’s very easy to run ‘what if’ scenarios that policy makers and industry executives readily grasp. And you can track the environmental emissions of the different types of plants.”

Arnie ran the Sandia Global Energy Futures Model for Velikhov during his visit, generating a great deal of discussion. “Kurchatov has greenhouse and energy data,” says Arnie. “They have knowledge of the power systems in Russia and detailed engineering models. Our knowledge base is in economic and engineering modeling, particularly high-level, strategic learning tools. Putting the two together would create something of real value for Russia and we could also use it to help other countries better see the value of nuclear power, relative to other energy and environmental options.”

Pulsed Power Past and Present

Kurchatov has been involved in inertial confinement fusion efforts for more than three decades, says Sandia Senior Scientist Craig Olson (1600), the Labs’ point for the fusion aspects of the agreement. “I first met my Kurchatov counterpart, Valentine Smirnov, in the 1970s at the first BEAMS conference,” says Craig. Several pulsed power z-pinch accelerators (such as Saturn and Z at Sandia, and Angara 5 in Russia) have produced outstanding results, and both laboratories are interested in experiments with the long-term goal of repetitive pulsed z-pinches for inertial fusion energy (IFE). Sandia is also working toward a larger z-pinch accelerator for demonstration of

high fusion yield, as is Russia, says Craig. “There is exceptional interest and expertise in both the US and Russia to develop a strong collaboration to promote the rapid development of z-pinch IFE.”

While much of the funding currently goes to magnetic fusion concepts, collaboration from Russian researchers could help to change the perceptions of funding groups in the future, Craig says. For now he is busy setting up video conferences with his counterparts in Moscow. In addition,



RUSSIAN SCIENTISTS examine one arm of their ANGARA-5-1 pulsed power machine at Kurchatov Institute in Moscow. The device, like Sandia’s Z machine, is exploring z-pinch phenomena.

tion, the international BEAMS meetings offer another opportunity for collaboration. Smirnov attended the 2002 meeting in Albuquerque and will host the 2004 session in St. Petersburg, Russia, says Craig.

Desalination in Nuclear Context

When Bob Eagan first discussed the agreement last year in Russia, he was pleasantly surprised by suggestion that desalination be considered a topic for collaboration. That’s because Sandia has been working on desalination issues in a number of approaches, explains Peter Davies, Director of Sandia’s Geoscience and Environment Center 6100.

“The Russians see this in the context that in addition to generating electricity, nuclear power

is a source of energy for thermally driven desalination processes,” he says. Sandia’s work has involved a systems approach with other agencies that has resulted in a roadmap (*Lab News*, Feb. 21) defining a research and development path for desalination technologies through the year 2020. “The roadmap provides us a useful framework for engaging others,” says Peter. “Right now we’ve identified counterparts [in Russia] but have not yet defined what we can do together.”

Yucca Mountain 2?

Recycling of spent fuel in new, advanced reactors (referred to as Generation IV reactors) could eliminate the need for a second Yucca Mountain-type repository in this century, says John Kelly, manager of the Labs’ Advanced Nuclear Energy Programs group (6406). “Right now we expect Yucca Mountain to reach maximum capacity around 2030, and by 2010 we need to decide if we are going to start a Yucca Mountain 2 project. We think that research and development on advanced fuel cycles can lead to viable options that would significantly delay the need for a second repository.”

Right now, other countries take spent fuel and extract the plutonium for reuse, John says. “We want a fuel cycle that is more proliferation-resistant and produces less residual waste than is used in other countries.”

Researchers can do this by developing a cycle to keep more difficult-to-handle actinides bound with the plutonium, making it less attractive for potential bomb-makers. “The current process is proven, however, and many countries aren’t sure they want to spend the money to develop a different process and establish it as a new international standard. A new process could reduce waste destined for high-level repositories like Yucca Mountain by as much as 90 percent. It would require an integrated systems approach involving both advanced reactors and advanced separations technology,” John says.

“What we’d like to do with our Russian counterparts is begin an information exchange activity

(Continued on next page)

11 buildings eliminate \$40,000 in electricity waste

Bldg. 895 reduces its electricity use by 34 percent

By John German

Not wasting energy requires teamwork. Ask Jason Strauch, the lead energy nag for Bldg. 895, a.k.a. the Robotics Manufacturing Science and Engineering Lab (RMSEL).

With quite a lot of self-discipline bolstered by the urgings of Jason and several other volunteer nags in the building, along with some assistance from the Facilities organization, the occupants of Bldg. 895 reduced the building's electricity use by 34 percent during the six-month period that ended March 31.

Ten other Sandia buildings reduced electricity consumption during the same period as part of a Labs-wide energy-saving contest announced in the Sept. 20, 2002, *Lab News*, sponsored by Sandia's Energy Management Program. In all, 20 buildings were signed up to participate.

To arrive at each building's reduction figure, its per-square-foot electricity consumption from October 2002 through March 2003 was compared to its per-square-foot consumption for the same six-month period in 2001-2002.

Significant savings

At a 34 percent reduction, Bldg. 895 was far and away the winner, earning its occupants a Gold award in the contest. Bldg. 821 earned a Silver award with a 25 percent savings. Bronze awards went to Bldg. 869 (a 17 percent savings), Bldg. 887 (16 percent), Bldg. 811 (15 percent), and Bldg. 905 (12 percent).

Other participating buildings achieving smaller savings were Bldgs. 807, 810, 823, 827, and 891.

In all, the participating buildings avoided using more than 820,000 kilowatt-hours of electricity and avoided releasing more than 800 tons of carbon dioxide into the atmosphere, says Malynda Aragon (10862) of Sandia's Energy Management Program. The savings equated to about \$40,000 in power costs, she says, although increases in other labs buildings offset any real savings.

"If only every building at Sandia could participate, we could really make a difference," she says.

The secret of my success

Jason says his building's success was due to several factors, not the least of which was some help from Facilities Management, which fixed some leaky steam pipes and optimized the chilled-water system, resulting in more efficient heating and cooling.

He recommends other self-appointed energy nags talk to their own building operators to get their HVAC systems functioning as efficiently as possible. He also suggests doing a little research to identify areas in each building where high energy use occurs, and then figure out how to minimize it.

Most important, he says, is to enlist the aid of energy misers in every part of the building to help get the word out and put peer pressure to work, if necessary.

"One of the things that helped the most

over here was the support of a few friends and like-minded coworkers," says Jason in an e-mail sharing his experiences with other members of a rapidly growing network of energy nags at Sandia. "In very little time, and mostly by word of mouth, there were people in most parts of the building who were going out of their way to make sure that their own, their neighbors', and common-area lights were turned off at the end of each day."

Energy Independence Day

A Labs-wide electricity "spike-down" is planned for the three-day holiday weekend beginning July 4. The purpose, says Malynda, is to "see how low we can go in terms of energy consumption."

"A lot of energy is wasted during weekends when few people are around, so we thought we would challenge people at the New Mexico site to see how much energy we can save during one weekend," she says. "We're calling it Energy Independence Day at the suggestion of the original Energy Nag."

Watch the *Lab News* and the *Sandia Daily News* for details as the July 4 weekend approaches.

If your building is not participating in energy saving efforts, please call Malynda at 844-1288 for more information and assistance.

For information about Sandia's Energy Management Program, see its web site at http://www-irm.sandia.gov/facilities/engn_proj/energyplan.htm.

Sandia-Kurchatov

(Continued from preceding page)

to discuss our efforts and their efforts and critique each other. That might help us avoid going down some dead-end paths." Such an information exchange and peer review could evolve as funding is developed, he adds.

Proliferation — Quantifying Risk

Researchers from Sandia's Modeling and Analysis Dept. 6415 are also working to identify how different technologies in the fuel cycle impact the potential for the spread of weapons. Using a process called Risk Informed Proliferation Analysis (RIPA), which involves a detailed knowledge of the various processes and the risks associated with them, a Sandia team is calculating "proliferation scores" for the various activities.

If technologies have the impact of making weapon-grade nuclear materials more available — thus making the creation of new weapons more likely — the team will assign a lower score. If a technology or activity makes it less likely that additional nuclear weapons can be built, it will be judged more proliferation-resistant and assigned a higher score.

"The next step is to get a dynamic, real-time assessment of the proliferation risk," says Gary Rochau, department manager and team leader. Because the Kurchatov Institute is working along the same lines, the area is ideal for collaboration and benchmarking activities, he says. Using a systems analysis approach and the RIPA expert information to help determine "where you should be looking," a dynamic system would allow one country to look at another's nuclear power generating systems in real time and assess if the system is being operated in an acceptable manner.

With certain protocols, such a system could

easily replace the kind of "independent verification" teams the world watched recently working in Iraq for the International Atomic Energy Agency. The system could protect a power plant's sensitive information but still provide processed data to indicate to others if the operations are within agreed upon limits, Gary explains.

Because of Russia's desire to export nuclear power systems on a "build, buy, and operate" basis for other nations, such systems could allay fears of weapon proliferation by allowing contin-

power to provide high temperatures or electrical energy needed for production, then hydrogen could be formed in a more environmentally friendly way.

"There are a lot of ways to make hydrogen for fuel," says Paul Pickard, Manager of Advanced Nuclear Concepts Dept. 6424. "All of them are difficult." Currently Sandia is working with researchers from General Atomics and the French government on a chemical approach that would make it easier to break hydrogen away from other compounds. The agreement with Kurchatov opens another avenue for exploration.

"There are a lot of materials, chemicals, and membrane technologies that could be useful in generating hydrogen," says Paul. "All these things are under discussion now." Also important will be the selection of specific reactor types for next-generation power plants, he says. Reactors that can "close" the fuel cycle, by minimizing waste, and couple to hydrogen production will be the goal.

Looking at the 'back end'

But, warns Dennis Berry, Director of Environmental Security Technology Center 6800, "any new reactor designed to produce hydrogen or desalinate water and produce power won't come to pass if we don't address 'back end' issues." The ability to dispose of reactor wastes, store radioactive materials, and determine

the best way to recycle and get beneficial use from existing waste, along with transporting wastes by rail or highway to repositories, constitute these back-end issues, Dennis says. "You don't have a complete fuel cycle if you don't work these issues."

Right now these back-end issues — some economic, some technical, some political — have blocked the cycle's completion, Dennis says. His center has outlined a number of these issues to help decision makers with informed decisions. "The Russians have significant knowledge in these areas, and we need to work with them to sort through some of the new reactor concepts as they come forward."



SANDIA RESEARCHERS continue to study the transportation of spent nuclear fuel to approved repositories, addressing one of several key back-end issues that must be resolved for nuclear power to contribute in the future.

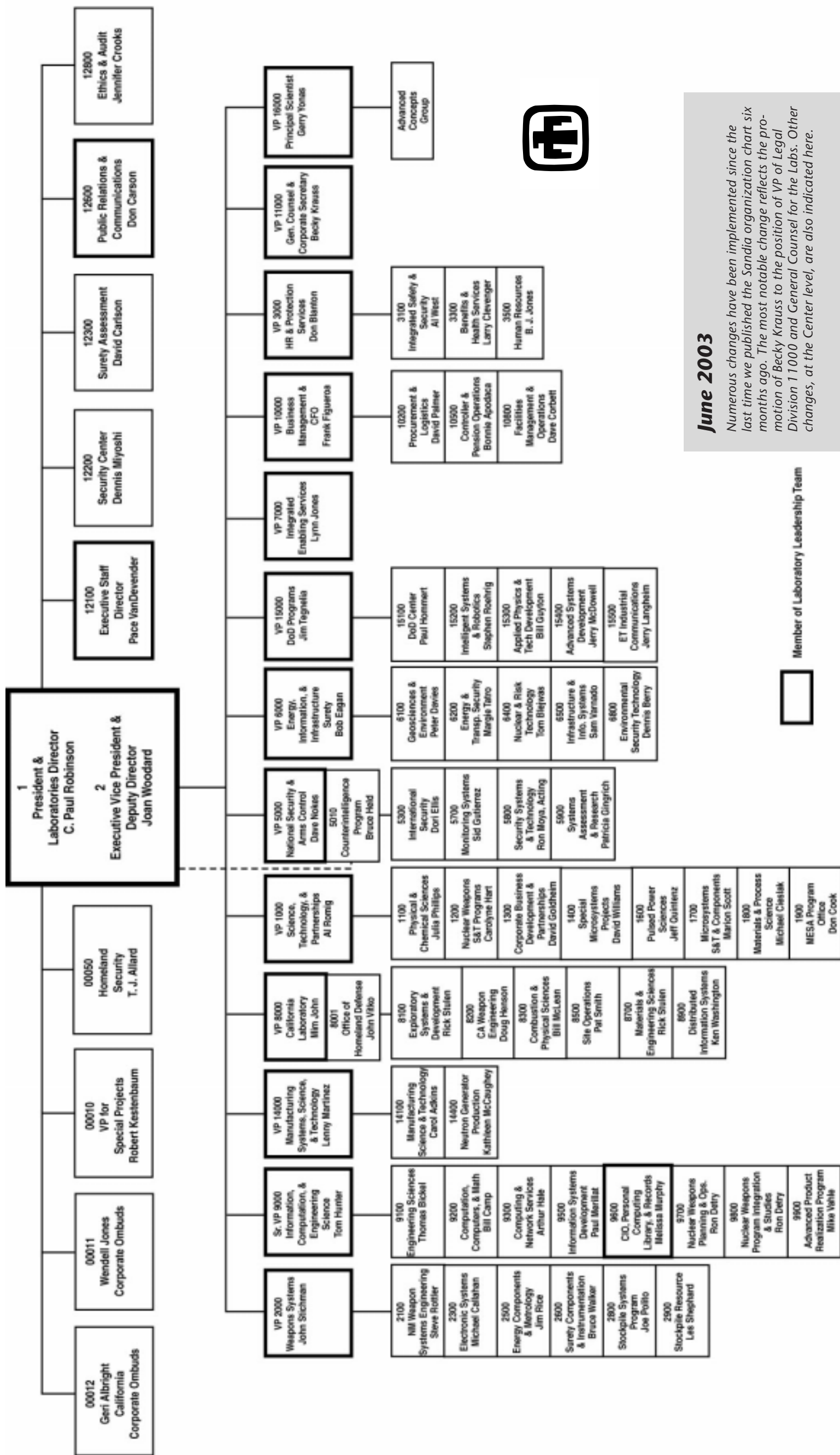
ual monitoring and help encourage, clean, cheap energy supplies in developing nations.

(Editor's note: Under the leadership of Dori Ellis, Director of International Security Center 5300, Sandia has a major role in the nonproliferation programs of the National Nuclear Security Administration, as described in earlier *Lab News* articles.)

Global hydrogen economy

Both Russia and the US have expressed interest in the concept of a hydrogen economy, with the separation of hydrogen accomplished in thermal chemical processes. Burning coal or natural gas could provide needed heat, but such burning produces carbon emissions. By using nuclear

Sandia National Laboratories



June 2003
 Numerous changes have been implemented since the last time we published the Sandia organization chart six months ago. The most notable change reflects the promotion of Becky Krauss to the position of VP of Legal Division 11000 and General Counsel for the Labs. Other changes, at the Center level, are also indicated here.

Member of Laboratory Leadership Team

Mileposts

New Mexico photos by Michelle Fleming



Soila Brewer
35 3522



Douglas Bloomquist
25 1630



Jose Rodriguez
25 1735



Charlie Sandoval
25 1751



Roderick Stanopiewicz
25 15149



Herman Vallejos
25 10843



John Williams
25 5741



George Davidson
20 6525



Glenn Roubik
20 14408



Marlene Uribe
20 14402



Alan Armentrout
15 3551



Anna Nusbaum
15 9612



Wendy (6100) & Michael (1800) Cieslak
20



Kay Rivers
15 9527



Recent Retirees



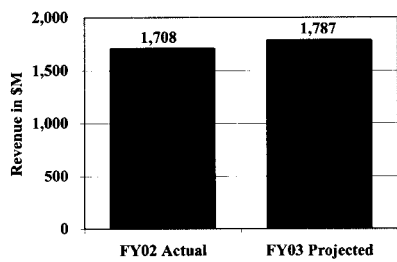
Darrell Munson
41 6113



Dave Fein
8 1744

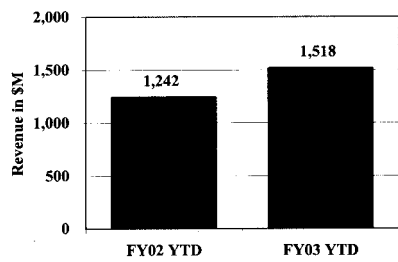
Spotlight on Sandia: A quarterly look at Sandia's financial health

Total Operating Revenue Comparison - FY02 to FY03 2nd Quarter



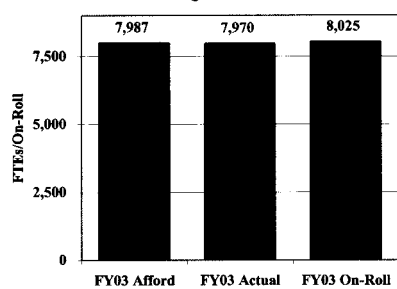
FY03 operating revenue projection exceeds FY02 by \$79M, primarily due to growth in NW SBU.

YTD Operating Revenue Comparison - FY02 to FY03 2nd Quarter



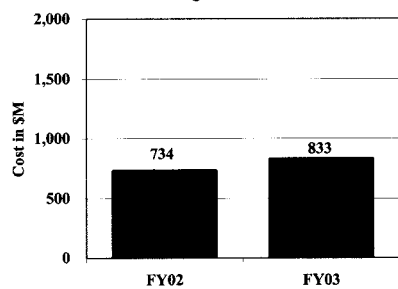
FY03 YTD operating revenue ahead of FY02 by \$276M but arriving later in the year than usual.

FY03 Affordable & Actual FTEs and On-Roll Comparison 2nd Quarter



FY03 adjusted on-roll positions us to increase actual FTEs up to affordable FTEs.

YTD Operating Cost Comparison - FY02 to FY03 2nd Quarter



FY03 YTD operating cost ahead of FY02 by \$99M and projected to increase even more during remainder of year.



Here is the FY03 second quarter report of Sandia's financial health. Frank Figueroa, VP 10000 & CFO, and his team in Controller's Organization 10500 (Indirect Financial Management Dept. 10508) maintain these charts to show Sandia's financial status in various areas. The charts are derived from the latest revenue, cost, and affordable FTE projections generated by the SBUs/SMU for Mission Council (April for the FY03 projections).

The first chart (top left) compares Sandia's total operating revenue projection for FY03 to actual FY02 revenue. The current revenue projection exceeds last year's actual revenue by \$79 million, primarily due to growth in National Nuclear Security Administration.

The second chart (top right) compares Sandia's FY03 operating revenue received year-to-date to FY02. Currently, revenue received exceeds

last year's revenue by \$276 million, primarily due to growth in NNSA and late receipt of funding last year.

The third chart (lower left) shows Sandia's affordable FTEs (full-time equivalents), actual FTEs, and adjusted on-roll count. Currently, the on-roll count indicates that the actual FTEs should basically match up with affordable FTEs by year-end.

The fourth chart highlights a different aspect of Sandia's financial health each quarter. For this report, the chart compares year-to-date operating cost from FY02 to FY03. The FY03 cost exceeds the comparable FY02 cost by \$99 million and is projected to increase even more during the remainder of the year, but appears on track to fall short of our current projection by approximately \$42 million.

These charts are updated and published each quarter. They are intended to keep you informed of the Labs' financial health. If you have any questions, please contact Waylon Ferguson at 844-3057 or Robin Reeves at 845-9990.

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

MISCELLANEOUS

GAS STOVE/OVEN; bicycle trailer, rear-axle attachment; hamster cages; push mower. Mitchell, 301-4386.

LONG-HAIRED CHIHUAHUA/PUG MIX, 1-yr.-old neutered male, Ralphie, moving, must find home. Wanya, 615-5752.

UPRIGHT ORGAN, \$200; Little Mermaid bicycle, \$25; dog-house, \$20; women's leather pants & skirts, new, many sizes, \$25. Mehler, 823-9020.

REFRIGERATOR, Sears, w/ice-maker, \$40. Schultz, 821-5158.

DOUBLE BED, electric, adjustable, beautiful brass headboard, w/massage, like new, \$1,450. Campbell, 294-6000.

COMPUTER, needs new hard drive, w/desk, CD burner, \$300 OBO. Chaves, 341-9595.

SWAMP COOLER, 6500CFM, side draft, 3/4-hp motor, new extra pump, used 1 season. Duran, 899-9418.

CEMENT MIXER, heavy-duty, like new, \$200. Hammons, 281-1205.

WASHER & DRYER, Kenmore series 80, heavy-duty, white, great shape, perfect for newlyweds, \$450 OBO. Hodges, 286-8429.

ARC WELDER, \$100; 2 chain-link gates (36" x 65") w/latch, hinges & misc. hardware, \$25. Shaw, 856-1141.

TWO GOLF BAG CADDIES, battery-powered, Kangaroo Li'l Joey models, \$100 ea. Keck, 237-0392.

COMPUTER, HP Pavilion, 333MHz Celeron, 64MB memory, 3GB HD, 56K modem, keyboard, mouse, display, speakers, \$150. Sinton, 828-9672.

CAMPER SHELL, fits Chevy S10, blue, fiberglass, sliding screened windows, never used, came w/truck, \$300. Aragon, 301-5515.

DOGHOUSE, insulated, redwood A-frame construction, for medium-size dog, free, you pick up. Dobrian, 286-8137.

WEDDING GOWN, simple & classic style, size 8-10, photo faxed upon request, \$75. Simon, 299-8468.

THREE STAR FINCHES, 1 Florida Fancy Finch, \$120; large hexagon cage, 32" x 6', w/extras, \$150. Bonnville, 294-6715.

WEIGHT BENCH, Brutus Triad Olympic, leg curl, butterfly, 300-lb. Weider Olympic weights, bar, weight storage tree, excellent condition, \$125. Vigil, 271-1328.

SARIS ROOF BIKE RACK, fits most cars, w/2-1/2 bike trays, \$115. McCrory 220-8326.

DINETTE, w/4 chairs, Chippendale, 48-in. dia., \$750: weight bench, w/multiple attachments & Olympic weights, \$150. Dwyer, 271-0741.

DUAL BABY STROLLER, side-by-side, good condition, \$50; bassinet, like new, \$35; teddy bear crib set, \$20. Moler, 286-2441.

COFFEE TABLE, end table, TV cabinets, & radio, Autumn Wood, solid oak, \$350 for all or will sell individually. Sansone, 296-7945.

FULL/TWIN BEDS, \$50 ea; recliner, \$50; lamps, \$10; desk, \$50; dining/game set, \$150. McKenzie, 203-6015, ask for Joyce.

TOOLBOX & WINDOW GRILL, Rawson-Koenig, great condition, fits Ford Ranger-sized pickups, \$250 OBO. Hadady, 292-1365.

FERRETS, 2, lovable, w/6-ft. 4-story cage, toys, beds, everything, \$100. Casey, 610-4327.

BED LINER, fits '99 to current F250 or F350 short-bed truck, excellent condition, \$75. Sanchez, 362-0297.

SINGLE BED, mattress, box spring, frame, like new, \$100. Lorenz, 281-9321.

REFRIGERATOR, good for a garage (i.e. beverages), \$50. Ward, 292-1618.

ENGINE, Ford 400M, 325-hp, Elderbrook performance intake, MSD billet distributor, many extras, brand new, high-performance, \$1,800. Howard, 296-6056.

WATERBED MATTRESS, Big Sur Hibernation Series, queen-size, \$100. Rinehart, 884-4887.

RADIO, Sony, AC/DC, AM/FM, w/CD player & dual tape deck-recorder, \$75; Pioneer double-cassette deck, \$30; stereo equalizer/analyzer, \$20. Pelletier, 884-3726.

FIREPLACE BOX, double walled flue pipe, 10-ft., \$300. Fink, 286-1858.

ENGAGEMENT RING, 1/3-carat diamond and wedding band, 14K white gold, size 6, lifetime guarantee, paid \$700, asking \$300, OBO. Dobbs, 293-5550.

BUILDING MATERIAL: 100 wood boards, 2" x 2" x 8' primed and painted, never used, \$150 for all. Duncan, 271-2718.

BABY CRIB, walnut, w/mattress and bumper pad, good condition, \$80. Sena, 298-0481.

SOUTHWEST AIRLINES VOUCHER, expires 4/04, \$325. Baca, 798-9806.

WASHER & DRYER, 24-in. laundry center, electric, Kenmore, 72" high x 26" deep, excellent condition, \$450. Plowman, 292-7939.

GRILL, Char-Broil Precision Flame 8000; 55-gal. aquarium, everything included, \$150; horse tack & supplies. Smith, 890-5388.

TABLE, white oak, ceramic table top, Southwestern design, w/four matching chairs, excellent condition, \$150 OBO. Werner, 342-1619.

BED, king-size, w/mattress & box spring, headboard, \$25 OBO. Lujan, 299-2218.

SWAMP COOLER, large, new motor, works great, needs new filters, \$20. Daniel, 286-6487.

TWO-HORSE COVERED TANDOM TRAILER, needs some work, photo available upon request, leave e-mail address, \$500. Gallegos, 865-1647.

POOL HEATER, 181,000-BTU, 3 yrs. old, paid \$1,300, asking \$600. Kolb, 899-0241.

MOVING BOXES, ~50, various sizes, free. Madrid, 459-5087.

BUNK BED, matching dresser, finished solid-pine frame, upper twin XL, lower twin fold-up, w/linen, \$200. Kwak, 232-2512.

TABLE, solid oak, w/6 chairs, \$200; Southwestern-style couch, 90-in., both in good condition, \$200. Kilbane, 922-9025.

SOUTHWEST AIRLINE TICKETS, roundtrip, no restrictions, no fees, expire 1/31/04, \$310 ea. Lieberman, 299-7739.

HONDA OUTBOARD MOTOR, 4 cyl., 10-hp, short shaft, used 10 times, serviced after each use, \$450 OBO. Patrick, 265-4569.

SOUTHWEST TICKETS, 2, Rapid Rewards, anywhere Southwest flies, w/drink coupons, \$315 ea. Smith, 293-1429.

GLASS TABLE, w/4 chrome/fabric chairs, \$120; Jaguar luggage, \$30; appliance cart (3-tier/elec.), \$15; oak/cane bench \$35; mini-blinds. Lucero, 292-1955.

DOG, seeking active companion(s), beautiful, black, medium, 1 year old, spayed, \$95 rescue fee. Nesbitt, 907-3791.

GARAGE SALE, multi-family, June 19 & 20, 8 a.m.-noon, furniture, more, 10801 San Antonio NE, Eubank/Academy. Yourick, 822-8148.

PLAYER PIANO ROLLS, 32, \$2.50 ea.; 2 wooden beams, 140" x 6" x 6", free, you haul. Pitts, 293-5481.

CAMERA, 35mm Olympus OMG, w/50mm lens & carrying case, electronic flash T-20, never used, \$135 OBO. Reynolds, 821-8779.

WATERBED FRAME, queen-size, headboard, w/storage & mirror, embellished w/roses, 6 under-drawers, liner, heater, no bladder (mattress). Spinello, 292-5681.

GREY RIVER LANDSCAPE ROCK, ~1-1/4-in. size; lava rock; both free, you haul. Ritchey, 299-7082.

How to submit classified ads

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

- E-MAIL: Michelle Fleming (classads@sandia.gov)
- FAX: 844-0645
- MAIL: MS 0165 (Dept. 12640)
- DELIVER: Bldg. 811 Lobby
- INTERNAL WEB: On Internal Web homepage, click on News Center, then on Lab News frame, and then on the very top of Lab News homepage "Submit a Classified Ad." If you have questions, call Michelle at 844-4902. Because of space constraints, ads will be printed on a first-come basis.

Ad rules

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

TRANSPORTATION

'01 CHEVROLET SUBURBAN LS, 4WD, AM/FM/CD/cassette, front/rear AC, power everything, excellent condition, \$25,000. Wolf, 281-0287.

'01 PONTIAC GRAND AM, 4-dr., AM/FM/CD/cassette, AC, 51.7K miles, bids accepted through 6/13/03, right to refuse bids, sold as is. SLFCU, 237-7384.

'97 LEXUS LX-450 SUV, 5 new Michelins, 6-disc CD, roof rack, tow pkg., running boards, alarm, alloys, 73K miles, good condition, \$25,000 retail, asking \$21,000. Dwyer, 271-1328.

'02 HONDA S2000, 6-spd., red ext., black int. 8K miles, excellent condition, save \$6,500 over new. Pugh, 899-3998.

'66 DODGE DART CONVERTIBLE, w/225 Slant-6, 3-spd. on column, daily driver, ready to restore, first \$2,000. Gershin, 293-9648.

'95 CHEVY K2500 SILVERADO, extended cab, long bed, 4x4, turbo diesel, AT, 95K miles, \$11,500 OBO. Kazensky, 362-2624.

'84 MONTE CARLO, 327 V8, PW, 2-dr., needs work, \$2,000 OBO; Motegi rims, MR12, 17X7.5, 4-lug universal white, \$300. Montoya, 319-0450.

'93 BMW 325i, emerald green, new Michelin tires, 1 owner, 98K miles, \$10,000 OBO. Garcia, 247-9437.

'90 BUICK LE SABRE, 4-dr. sedan, V6, all power, 112K miles, everything works, \$2,200. Thompson, 292-2877.

'02 MAZDA TRIBUTE LX-V6, 4 WD, fully loaded, desert metallic, only 7.2K miles, excellent condition, \$21,000 OBO. Varro, 237-7212, ask for Joe.

'95 TOYOTA 4-RUNNER, 4x4, AC, PW, PL, cruise, 4-dr., silver, 123K miles, \$9,500 OBO. Chavez, 362-6060.

'97 VW JETTA GLX VR6, white exterior, all options, highway miles, great condition. Martinez, 265-5920.

'93 NISSAN QUEST MINIVAN, AC, PW, PL, 140K miles, good condition, \$2,220 OBO. Sena-Henderson, 440-2141.

'86 PONTIAC FIERO SE, V6, AT, leather, 34K miles, near showroom condition, \$5,000. Gluvna, 884-5251.

'98 SUBARU LEGACY OUTBACK, 5-spd., AC, 54K miles, excellent condition, \$12,500. Domino, 291-1480.

'92 INFINITI G20, 5-spd., leather, fully equipped, new brakes, 112K miles, excellent condition, \$3,950. Thompson, 293-8390.

'01 DODGE SPORT PKG. 1500, 4x4, quadcab, loaded, tinted windows, bed liner, 45K original miles, excellent condition. Stevens, 980-5639.

'92 JEEP CHEROKEE LAREDO, 5-spd, 4WD, AC, AM/FM/cassette, alloy wheels, 158K miles, \$3,200. Blickley, 293-4694.

'99 LINCOLN TOWNCAR, executive series, new tires, low mileage, excellent condition, \$15,100 OBO. Blain, 293-3971.

'98 FORD WINDSTAR GL VAN, champagne gold, seats 7, w/captain's chairs, fully loaded, 120K miles, mostly highway, \$5,900. Baker, 228-7228 or ingrid.e.baker@LMCO.com.

'57 MGA CLASSIC, ready to restore, car complete, priced to sell. Holst, 294-1987, evenings, ask for Wes.

'95 DODGE CARAVAN V6SE, loaded, new transmission, w/guarantee, new Michelin tires, excellent condition, \$3,800 OBO. Greer, 293-3842.

'91 CADILLAC SEDAN DEVILLE, 83K miles, \$5,495; RZ67 professional camera system, \$4,795. Luther, 822-1187, www.rluther.com/4sale.

'90 FORD CUSTOM VAN, new AC, new paint, excellent interior, seats 7, 4 captain's chairs, \$6,000. Sharp, 281-7986.

'02 PONTIAC GRAND AM, 4-dr., V6, champaign beige, 30.5K miles, 5.5K left on factory warranty, beautiful condition, \$10,750. Perrine, 293-1429.

RECREATIONAL

'87 BOUNDER, Class A, 31-ft. base-ment model, 454/turbo 400, loaded, 40K miles, excellent condition, \$15,000. Paboucek, 821-2049.

'02 MOTORCYCLE, CBR 954, red/black, only 235 miles, asking \$9,900. Smith, 259-9441.

'02 JET SKI, Sea Doo GTX, 4-tec, 4 stroke, 3-seater, 155-hp, new/5hrs, trailer/accessories, \$9,400. Thomas, 294-2960.

'82 KAWASAKI GPZ 750, Kerker pipe, K&N Stage 3 jet kit, 12K miles, excellent condition, \$1,600. Healer, 298-6967.

'81 VW WESTPHALIA CAMPER, beige, MT, new brakes, CVs, springs, 85K, excellent condition, \$5,000 firm. Coblenz, 265-4452.

SAILBOAT, Force Five, w/trailer, complete rigging, good condition, \$600. Roberts, 275-2941.

'96 HONDA 1100, American Shadow Classic, windshield, saddlebags, \$3,000. Shirey, 281-9455.

'98 SUZUKI RM 250, Motorcross bike, purchased '99, great upgrade, very fast, excellent condition, \$3,000. Buteau, 856-7705.

'84 RV TRAILER, Holiday Rambler Presidential 5th wheel, 36-ft., AC, stove, furnace, \$2,500 OBO. Carrejo, 883-7621.

'99 HARLEY DAVIDSON, Sportster 1200, Dualspark, high compression, 12K miles, motor excellent condition, many extras, \$8,700. Wakeland, 771-9131.

'94 NOMAD 5TH WHEEL, 20-ft., w/hitch for boat, clean, \$6,000. Campbell, 856-9195.

'86 PONTOON BOAT, 28-ft. Party Barge, 150-hp engine, bar w/ice-box, grill, new deck, \$6,500. Johnson, 255-6650.

RACING MOUNTAIN BIKE, woman's, 16-in., Kona, \$400; Mongoose mountain bike, men's, 16-in., dual suspension, \$150. Sanchez, 345-3610.

'86 REINELL, 18.5 open bow, I/O, new 5.0 L V8, tandem trailer, Bimini, must see. \$5,650 OBO. Stevens, 292-1437.

RECUMBENT e-BIKE, adjustable frame, side mirror, black, like new, \$500; will trade for high-end treadmill. Tardiff, 293-0462.

MOUNTAIN BIKE, specialized Hard Rock Sport, Shimano components, free lifetime maintenance, excellent condition, \$110. Valdez, 228-6859, ask for Albert.

WINDSURFING BOARD, Alpha 200, all-around fun, 2 sails, \$200 OBO. Zirzow, 281-9896.

TREK man's bicycle, 26-in., titanium, 10-spd., like new \$150; woman's bike, like new, \$50. Carson, 858-1460.

'84 SOUTHWIND, 27-ft., P30 chassis, w/extras, awning, AC, generator & more, 57K miles, good condition, \$8,745. Adams, 881-4351.

REAL ESTATE

3-BDR. HOME, study, 2 living areas, 0.33 acre, game room, updated, 2,900 sq. ft. 2-car garage, Holiday Park, \$227,500. Sarfaty, 323-8576.

4-BDR. HOME, 2-story, 2,441 sq. ft., 2-1/2 baths, great view of the mountain, tile, water system, \$179,900. Crossland, 890-0728.

O.65-ACRE lot 35, Manzano Springs, \$2,500; Lots 51 & E1/2 Lot 52, 15-acre, T8-N-1E \$20,000. MeSecher, mm74525@atoka.net.

EAST MOUNTAIN PROPERTY, 5.5 wooded acres, great well, 2 power drops, w/mobile home, \$95,000. Feltz, 856-1322.

3-BDR. EAST MOUNTAIN HOME, office, 1-3/4 baths, exercise room, abundant storage, 2-car garage, w/workshop area, great views, \$19,000. Culler, 286-1855.

4-BDR. HOME, 3 baths, 3-car garage, best city/mtn. views, Tanoan East, 2,868 sq. ft. Henderson, 299-6083.

4 BDR. HOME in Stonebridge Subdivision, near Cibola High School, community features pool & park, 2,240 sq. ft. Edgar, 922-1827.

WANTED

MARTIAL ARTS SPARRING EQUIPMENT, suitable for 7-to 9-yr-old, hand/foot guards. Schalip, 296-4006.

MOVING BOXES, any size or shape. Giersch, 899-6005.

TRAILER, enclosed, single-axle, 10-ft. long. Horton, 883-7504.

GRADUATION VIDEO, Moriarity High School, 5/24/03, for purposes of borrowing & duplicating, w/last 2 speakers. Stavros, 281-8206.

TRADE: Southwest voucher, roundtrip, expires 1/24/04, for voucher that expires after 4/1/04. Cocain, 281-2282.

GOOD HOME, Cocker Spaniel, 1-yr.-old, female, buff, spayed, lots of energy, smart, house-trained. Jernigan, 293-8096.

DONATION, Southwest/or other frequent flyer awards so family of 6-yr.-old Estancia girl awaiting a heart donation for a transplant can fly round trip Albuquerque to LA. Ben Conklin, ben@uphi.net.

WORK WANTED

COLLEGE STUDENT available for house/pet sitting, until September. Roehrig, 281-2695, ask for Jessica.



Volunteer awards reflect hours of community effort

Employees, retirees receive Shining Eagle, Goodness awards

Dennis Martin and Lee Cunningham have Sandia's top volunteer awards for employees.

In the retiree category, Mary and Warren Davenport, Duane Hughes, Irv Hall, and Larry and Betty Lane all received recognition.

But, the real winners were dozens of community service agencies. These agencies were helped not only by the award winners, but by a dedicated corps of more than 3,000 Sandia volunteers.

These institutions provide services and other aid to children and adults throughout the area, notes Darlene Leonard (12650), Sandia's volunteer coordinator.

The volunteers were honored at a recent breakfast meeting. The 300 employees and retirees who attended the celebration with Paul Robinson and other Sandia executives recognized all Sandia volunteers, Darlene says.

Dennis Martin of Sandia's RF and Microwave Design Dept. 1751 was awarded the employee Shining Eagle Award for his work with Boy Scout Troop 189 in Albuquerque. A volunteer since 1981, Dennis "gives my weekends" to Scouting, he

The real winners were dozens of community service agencies. These agencies were helped not only by the award winners, but by a dedicated corps of more than 3,000 Sandia volunteers.

admits. As Scoutmaster he arranges campouts and other activities, including public service projects.

Mary and Warren Davenport and Duane Hughes all received the retiree Shining Eagle Award. Mary and Warren logged volunteer hours involving Bible study, sing-along, and senior day care activities. Duane served as a job co-captain on the Sandia Habitat House, constructed last year.

In recognition of Sandia's Shining Eagle winners, Lockheed Martin Corp. will award \$500 each to the Boy Scouts on behalf of Dennis Martin; to the Alzheimer Association on behalf of Mary and Warren Davenport; and to Habitat for Humanity

on behalf of Duane Hughes.

Lee Cunningham, Manager of Printing and Publishing Dept. 12630, was awarded the employee Goodness Award. In the retiree category, Irv Hall, Duane Hughes, Larry and Betty Lane received the Goodness Award. Lockheed Martin Sandia established the Goodness award in 1998 in the name of a now-deceased popular Sandia employee, Harriet Goodness, "who personified her name with her volunteer efforts."

Lee was recognized for a variety of efforts, including his work as a day captain on Sandia's Habitat project. Lee and his hearty crew achieved a Habitat first by pouring the house driveway instead of hiring it done. He has also helped at the Presbyterian Ear Institute and the Albuquerque Indian Center.

Irv, Duane, Larry, and Betty received the first Goodness awards given to retirees for sharing duties as job co-captains at the 2002 Sandia Habitat project.

For more information on Sandia's volunteer programs and current opportunities, call Darlene at 844-8024. — Will Keener

Lab News reader service information

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, non-profit organizations, media, and private life who request it.

Retirees (only):

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

Others:

To receive the *Lab News* or to change the

address (except retirees), contact Michelle Fleming, Media Relations & Communications Dept. 12640, at telephone 505-844-4902, e-mail meflemi@sandia.gov, or Mail Stop 0165, Sandia National Laboratories, Albuquerque, NM 87185-0165.

Employees:

To change the number of copies of the *Lab News* your Mail Stop is receiving please call Honario Anaya, Mail Services Team 10268-4, at 844-3796. (At Sandia/California contact the Mail Room at 294-2427.)

Web Users:

The *Lab News* is on the Web at www.sandia.gov/LabNews.

Feedback

Q: Lack of convenient parking has been a major complaint at Sandia for many years. Has there been any thought given to designating some of the closer rows for longer-term employees? This would have the effect of rewarding employees for their longevity as Sandia is trying to encourage employees to extend their careers as well as requiring less walking for older employees.

A: Thank you for the suggestion. There are some areas where parking is congested and the demand for the parking spots exceeds the number conveniently available. Currently, we are not going to implement any additional reserved or preferential parking, other than those absolutely necessary, such as Handicap, Medical, Carpool, Visitor, etc. The problems with preferential parking, other than giving special treatment to small segment of the population, is the need to have a predefined process to identify who would get to park where, an initial cost to develop the parking, an ongoing cost to maintain the spaces, and the cost to provide for enforcement of the parking restrictions from Security. We are developing additional parking lots to help relieve the most congested parking areas. We encourage all Sandians to consider alternative transportation to and from work.

— Ed Williams (10864)

Q: Aren't there any rules regarding what material is inappropriate to post in public areas (e.g., above public copiers, fax machines, printers, on bulletin boards, etc.)? It seems employees are taking it upon themselves to "share" newspaper articles with entire buildings by posting them. Many of these articles have nothing to do with our jobs (e.g., newspaper article about Notre Dame football coach who was fired because he'd lied on his résumé). Others may apply to our jobs, such as a newspaper article about employees misusing the Web, but I don't want to have to look at them every time I'm at the printer or copier. I'm an ethical person, as I believe most Sandians are, and I don't think all of these newspaper "warnings" about unethical behavior create a pleasant work environment.

A: Yes, there are rules about what can go on Sandia bulletin boards. This same guidance applies to posting materials on walls and other public areas. These are work areas, and anything posted, other than information directly related to Sandia/LMC business and Sandia/LMC activities, is inappropriate. Examples of what may be on bulletin boards are information about ES&H, EEO/Diversity, Sandia meetings, ECP, Savings Bonds, union information, and official Sandia announcements. Anything else related to non-Sandia organizations or groups and their meetings, events, activities, or news clippings is inappropriate. These bulletin boards are provided as a way for management to get the word out to employees about Sandia/LMC related matters. They are not for the use of non-Sandia organizations or private individuals. — Don Carson (12600)

Sandia's two top-50'ers get together



DISTINGUISHED DUO — Sandia's Sid Gutierrez, left, and Frank Figueroa recently posed together for this photo honoring their each being selected among the 50 Most Important Hispanics in Business and Technology by *Hispanic Engineer* magazine (*Lab News*, April 18 and May 16). Sid, a former NASA astronaut who flew on two space shuttle missions, one as pilot of the *Columbia* in 1991, one (on the *Endeavour* in 1994) as Commander, is Director of Monitoring Systems Center 5700. Frank, who came to Sandia after working as business manager and CFO of Lockheed Martin Energy Systems and who earlier served 20 years in the Air Force as an engineer and launch controller, is Sandia's Vice President for Business Management and the Chief Financial Officer.

(Photo by Bill Doty)