

# 'Millennium bug': Sandia team scrambles to defuse Year 2000 computer time bomb

**Sandia not immune to worldwide computer date glitch**

By Bill Murphy

Lab News staff

It's being called the "millennium bug," the unintended computer "virus" that is lying dormant inside millions of computer and control systems worldwide, waiting to awaken on Jan. 1, 2000. No one is quite sure how big a problem the bug will be; computer gurus have been quoted in the news media as predicting everything from global catastrophe to mild hiccups when computers' internal clocks tick over to "00."

Sandia's systems are not immune. To scope out the extent of exposure to mission-essential systems, the Labs has established a Year 2000 Investigation and Remediation Project, coordinated by Carol

Harrison (4011) and including team members from several divisions.

"The Year 2000 [issue] came up on our radar screen maybe six months ago," Carol says, "so industry has a head start on us. We've actually had people from industry come in and tell us how they've done remediation efforts. They've scared the liver out of us by saying 'Now don't forget this, this, and this.' From all the sense we've been getting, it's really quite a big problem."

The Year 2000, or Y2K as it is known among computer professionals, will be a problem for any computer operating system, application, or other electronic device that uses a two-digit field for the year, as in 04/11/97. That two-digit date field — a seeming innocuous programmer's shortcut usually intended to squeeze the most out of precious memory on early computers — is a time bomb, one that will certainly go off

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*"From all the sense we've been getting, it's really quite a big problem."*

## Sandia LabNews

Vol. 49, No. 7

April 11, 1997



## Sandians help former Soviet Union protect nuclear material and facilities

By Neal Singer

Lab News staff

In 1994, a band of criminals threatened to blow up a nuclear power plant if their friends weren't released immediately from a Lithuanian jail.

Though the power plant, Ignalina, provided 87 percent of Lithuania's electricity, the government was forced to shut down the plant's Chernobyl-style reactors to search for explosives.

To forestall future extortion attempts, the government sought international help.

For this reason — and the larger concern that nuclear materials could be stolen for use in weapons — engineers and technicians from Sandia are in the former Soviet Union at 44 sites, 30 of them in Russia.

The idea is to protect weapons-usable nuclear materials against theft, extortion, or physical takeovers by criminals or terrorists, both at nuclear sites and during transport to other locations. The effort, led by Rebecca Horton (5318) and J. D. Williams (5821), now involves 40 Sandia engineers who design and install

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## Integrated Job Structure team adjusts new job titles based on customer feedback

The team responsible for implementing Sandia's new Integrated Job Structure (IJS) has reconsidered job titles that were to be part of the new IJS "job ladder" system following feedback from managers being trained in the new structure and from employees.

Now when managers reclassify technical staff, technician, and laboratory staff employees into the IJS in coming months, they'll be using more familiar job titles.

Most technical employees, for instance, will be called "Members of Technical Staff" and "Senior Members of Technical Staff" rather than "Technical Staff I" and "Technical Staff II." Employees placed on the first two rungs of the Laboratory Staff ladder won't be called "Laboratory Staff I" and "Laboratory Staff II," but rather "Members of Laboratory Staff" and "Senior Members of Laboratory Staff." (See "The three IJS staff ladders" on page 7.)

Ed Cassidy, Manager of Compensation and Job Evaluation Dept. 3545, says the IJS titles with the numerical designators (Technical Staff I, Laboratory Staff I, Technologist I, etc.) were adopted originally because managers who helped pilot the IJS last summer overwhelmingly said they preferred titles that departed from existing titles. Those managers believed that different titles would help them use the level chart criteria to place employees into the IJS appropriately without the

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TELLTALE FILM — George Baldwin (5341) examines a roll of tamper-evident shrink wrap developed at Sandia. The material provides evidence if sensitive facilities or objects are disturbed. When heat is applied, the film layers shrink randomly and produce a unique fingerprint. Sandia's Cooperative Monitoring Center (CMC) demonstrates the shrink wrap and other technologies to visitors from around the world. The technologies help boost confidence among potential adversaries that regional arms control agreements are being complied with by signatories. The CMC is organizing and hosting a major international arms control conference April 18-20 in Albuquerque. Arms control experts from 30 countries will participate. For more information, see page 2. (Photo by Randy Montoya)

Bring your 9- to 15-year-old daughters to work April 24 2

Researcher watches unburned hydrocarbons during combustion 3

8 Four Sandians honored by Vice President Gore for auto research

9 Expect many business practices to change between now and Oct. 1

# This & That

Seeing stars - Perceptive readers may have already noticed our slightly altered masthead on page one. The subtle change is part of a larger move to weave a common graphic thread into Sandia's major publications, other printed materials, and electronic media.

You'll see the stars (and stripes) theme - in a not-so-subtle, full-color form - on Sandia's recently redesigned and reorganized External Web site. Give it a look at <http://www.sandia.gov>; it should be running by today and it has lots of information that Sandians and our customers will find useful; see related Web Watch feature on page 7.

About May 1, some sharp-looking new 9 1/2- by 12-inch Sandia pocket folders with the same motif will be available through our Just-in-Time (JIT) system. They'll be impressive literature containers for Sandia visitors and conference attendees.

\* \* \*

World's worst wig? - What do you think? Did Charles Miller, recent retiree from Dept. 7842, make a good choice when he selected his new wig? Rumor has it that Charles invested about half of his first Sandia retirement check in this rug, and it looks to me like some "rug merchant" unloaded some faulty merchandise.

OK, it's actually a coonskin cap. Charles, as you might expect from the twinkle in his eyes, is a bit of a character, and he insisted that his *Lab News* retirement photo be made while he was wearing the cap. For a full view, including "Charles' tail," see the retiree photos on page 10.



Retiree Charles Miller

\* \* \*

A driving force in reducing bureaucracy - Reducing bureaucracy isn't easy, but Sandia has had much recent success, most notably the reengineering of our corporate policy development and deployment processes (*Lab News*, March 28). Credit for starting this initiative last spring and for the project vision goes to Corporate Policy Dept. Manager Shirley Wallace (15105), who's currently convalescing from a stroke she suffered in October. Shirley, all Sandians thank you for simplifying our work lives, and we hope your recovery is going well.

\* \* \*

More family service records - We established family service records for Sandia/New Mexico in the last issue. We didn't get many entries from Sandia/California, but the Wackerly brothers (both retiring this month) and their wives appear to be tops there in family service with 116 years: Jerry (8804) has 38 years, his wife Judy (ret.) has 25, brother Carl (8210) has 34, and Carl's wife Dolores has 19. The Allen family gets runner-up honors with 95 years: Ron (ret.) has 35 years, his wife Gayle (8811) has 18, brother Johnny (8532, retiring this month) has 32, and Johnny's wife Barbara (8522) has 10.

Special mentions - I promised to include some special mentions in this issue, but lack of space forces me to hold them for one more issue.

- Larry Perrine (845-8511, MS 0129, [lgperri@sandia.gov](mailto:lgperri@sandia.gov))

## International Arms Control Conference comes to Albuquerque April 18-20

Internationally known experts from government, business, the armed forces, and academia representing the United Nations, NATO, and about 30 countries are coming to Albuquerque April 18-20 for an arms control conference organized and hosted by Sandia's Cooperative Monitoring Center (CMC).

The seventh annual Arms Control Conference, which will focus on "Arms Control Issues in the 21st Century," will consist of an opening session with keynote addresses and panel discussions on five topics:

- The future of nuclear weapons
- Conventional arms: Their future effects
- China: The role of arms control in strategic security
- Transparency: The new verification agenda
- Chemical weapons convention: Its implementation

### Addresses by numerous dignitaries

Bill Richardson, recently appointed US Ambassador to the United Nations, will address the conference mid-morning Saturday, April 19. Other distinguished keynote speakers include Brig. Gen. Thomas Kuenning Jr., Director of the On-Site Inspection Agency in Washington (Saturday morning); Ambassador Thomas Graham Jr., Special Representative of the President for Arms Control, Non-Proliferation, and Disarmament (Friday evening); and Sen. Jeff Bingaman, D-N.M., who will speak on "Major defense and arms control issues before the 105th Congress" (Saturday evening). Distinguished government officials and foreign affairs experts from throughout the world will chair or serve on the five panels.

### CMC helps settle regional conflicts

The Cooperative Monitoring Center assists nations throughout the world in evaluating the potential roles technology can play in helping to solve regional conflict and security problems. Technological approaches include satellite monitoring systems, unattended ground sensors, and on-site inspection support systems.

"This conference brings together key leaders in the arms control community to discuss cutting-edge issues that are of concern to nations around the world," says conference coordinator James Brown (5341) of the CMC. "Previous conference participants have enthusiastically supported the conference, and it has succeeded in furthering discussions, both formal and informal, between arms control experts."

Brown says published proceedings of previous arms control conferences have been used for a variety of purposes, including the teaching of national security issues at major universities.

Saturday and Sunday (April 19 and 20) conference sessions will be held at the Sheraton Uptown Hotel. Formal conference events will begin with dinner Friday evening (April 18) at the Petroleum Club of Albuquerque.

- Chris Miller

## Bring your daughters to work on April 24

### Program aimed at needs of girls between the ages of 9 and 15

Sandia's Women's Program Committee is again sponsoring "Take Our Daughters to Work Day" at Sandia on Thursday, April 24. This event is held in conjunction with the nationally designated day.

Take Our Daughters to Work Day is designed to focus attention on the educational needs of

girls between the ages of 9 and 15. It is during these critical middle-school years that many girls drop out of math and science courses.

Sandia employees and contractors and DOE/KAO employees may bring their daughters, granddaughters, sisters, nieces, and female friends between the ages of 9 and 15 (girls born between April 24, 1982, and April 24, 1988, no exceptions) to work on this day.

Registration will be held at the Technology Transfer Center (Bldg. 825) beginning at 7 a.m.

A registration form containing additional information (including security and safety information) will be available through the *Weekly Bulletin* on the Sandia Internal Web. Forms are also available by fax at 284-INFO.

Bring completed forms (advance supervisory approval is needed) with you on April 24. A similar "Son's Day" will be scheduled in the future. Details are not yet available.

For information about Take Our Daughters to Work Day, contact Krista Edmonds (3611) at 844-1474 or Kathy Silva (3611) at 844-6281.



## Congratulations

To Teree and Bobby (2314) Rush, a daughter, Jessica Hope, March 15.

To Mia and Steve (2346) Blankenau, a daughter, Maret Elizabeth, March 19.

To Lynn and Mike (2314) Mundt, a daughter, Alexis Rose, March 27.

## Sandia LabNews

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Lab News fax .....505/844-0645

Published Fortnightly on Fridays by  
Employee Communications Dept. 12640, MS 0165

LOCKHEED MARTIN

# CRF project sheds light on how fuel can escape combustion, exit in exhaust

*Eliciting images in a realistic engine takes more 'elbow grease' than magic*

By Nancy Garcia

California reporter

Working with a laser and an intensified video camera, engine researcher Bob Green (8362) has obtained images from the cylinder of a firing engine that reveal for the first time how fuel that has escaped combustion while trapped in a small crevice volume is transported from the crevice to the exhaust.

Earlier research had correctly determined that some fuel escapes combustion in cool crevices in the cylinder and is later emitted in the exhaust. Bob and technician Duane Sunnarborg (8362) synchronized a laser imaging system with an optical research engine and found a new mechanism by which the in-cylinder transport of unburned fuel occurs. Their findings at Sandia's Combustion Research Facility (CRF) could help engine designers reduce emission of unburned hydrocarbons.

The research engine was fueled with propane doped with acetone, which fluoresces in ultra-violet laser light. Using an inclined mirror attached to the top of the piston and a quartz window above the cylinder bore, Bob illuminated the acetone tracer with a sheet of laser light and collected an image of the resulting fluorescence with the intensified video camera.

Viewing the corner formed by the intersection of the cylinder wall and the piston top that contains the exit of the piston ring crevice, he observed two strikingly different phenomena depending on the location of the top ring gap. With the ring gap located at the image plane, unburned fuel was observed, late in the expansion stroke, as a thin layer on the cylinder wall that was scrolled by the rising piston into a corner vortex during the exhaust stroke. On the other hand, when the ring gap was located well away from the image plane, the unburned fuel was observed to exit the crevice as an impulsively driven wall jet early in the exhaust stroke. These situations are illustrated in the figure.

## New insight into what happens

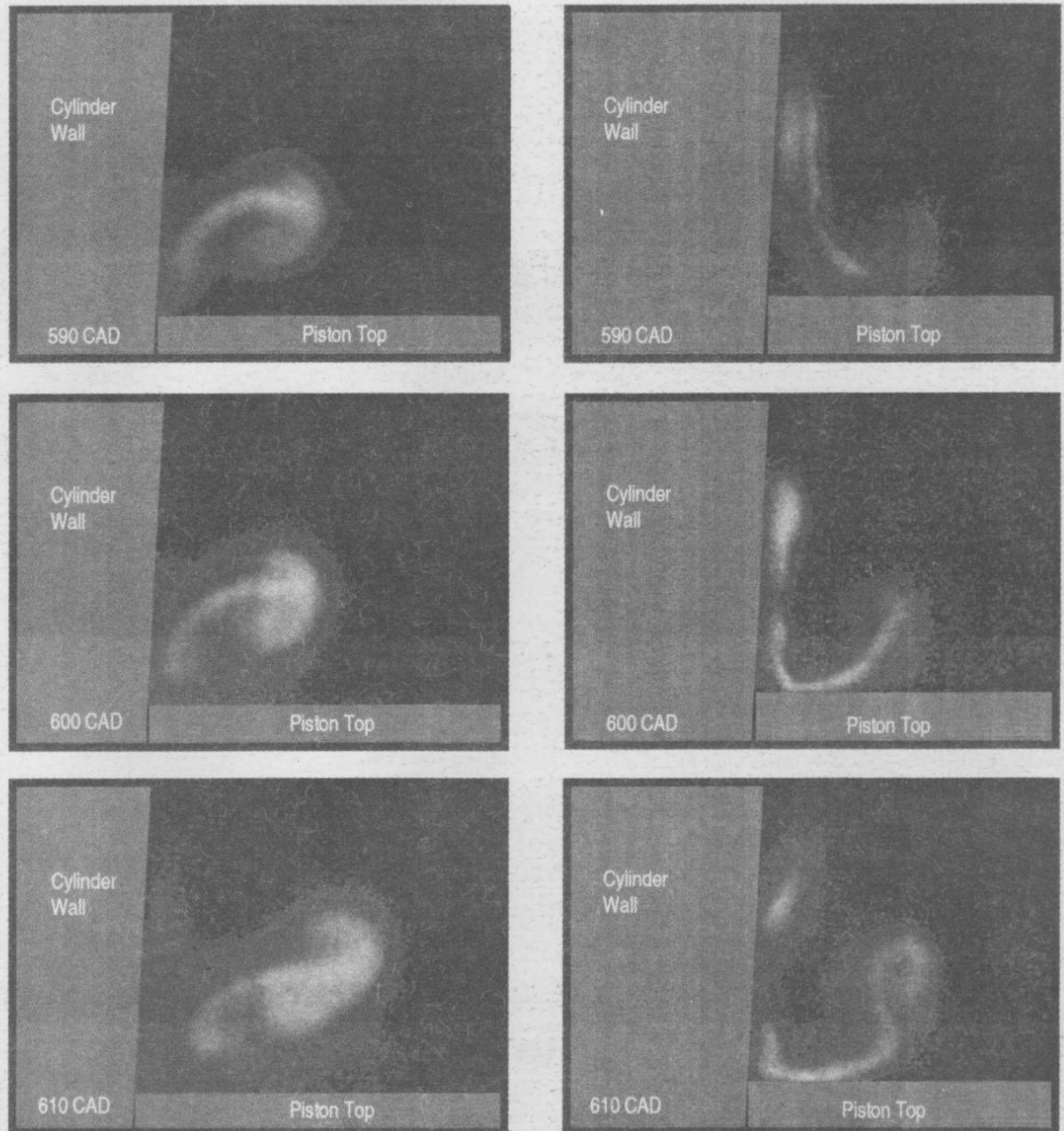
Setting up the engine, laser, and imaging system and getting the techniques to work took about 18 months. The effort has yielded new insight into what happens during the time unburned fuel is transported out of combustion chamber crevices and through the cylinder to the exhaust valve, Bob says. "Hopefully, this new insight will allow engine designers to deal more effectively with the emission of unburned hydrocarbon species," he adds.

He presented the work recently in a paper at the 1997 International Congress of the Society of Automotive Engineers (SAE). The work was funded by DOE's Office of Transportation Technologies in a cooperative research and development agreement with the Low Emissions Partnership of USCAR, a precompetitive consortium of the Big Three auto makers. This project is one of many that contributes to the Partnership for a New Generation of Vehicles, in which the national laboratories are working with US auto makers. (See related story on page 8.)

Although the research Bob conducted with Lawrence Cloutman of Lawrence Livermore National Laboratory ended last year, Bob says he still receives many inquiries from industry about the subject.

"This is the first time the fuel that has escaped combustion in crevices has been observed under

*"This is the first time the fuel that has escaped combustion in crevices has been observed under realistic conditions in an operating engine."*



ABRACADABRA — A temporal sequence of images illustrating the flow of unburned hydrocarbons from the upper ring land crevice: 1) for the case where the upper ring gap was located well away from the image plane (left column), and 2) when the ring gap was located at the image plane (right column).

## Sandia California News

realistic conditions in an operating engine," Bob says. "It's an important source of emissions."

These crevice volumes account for about half the unburned fuel that exits the engine, he says. However, once the catalytic converter is warmed up, most of this fuel is oxidized before the emissions can exit the tailpipe.

### Other SAE presentations

Also making presentations at the SAE Congress in February were John Dec (8362), who presented a new description of the diesel combustion process based on the combined results of several years of research as well as new data; Pete Witze (8362), who co-authored a paper with Bob showing how fuel injection strategy can affect cold-start emissions; and Ron Stoltz (12120), who discussed how Sandia uses its intranet to connect design, process, and production engineers and how this has reduced cycle time and improved the quality of defense components.

For his part in serving as chairperson for the Fuels and Lubricants combustion activity and helping initiate the new spring SAE Fuels and Lubricants meeting, Dennis Siebers (8362)

received the Forest R. McFarland Award. The award recognizes individuals who have rendered outstanding service in organizing technical sessions. He was cited as someone who "can always be counted on for well-arranged topical sessions while meeting conference deadlines."

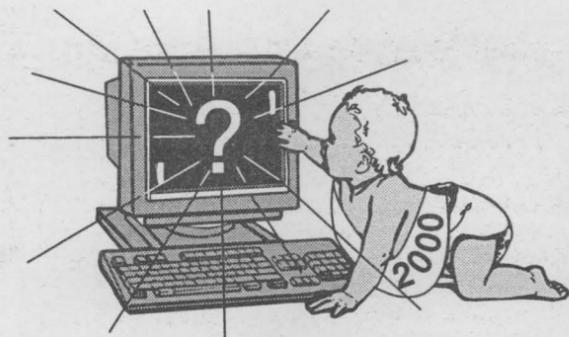
### Get a half life!



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- Store volunteers

For more information, contact Virginia Salazar at 284-3229 or by e-mail at [vsalaz@sandia.gov](mailto:vsalaz@sandia.gov)



## Year 2000 glitch

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unless it is defused.

Some industry experts have calculated the cost to diagnose and repair Y2K problems in the US alone at \$70 billion. The worldwide cost could reach into the hundreds of billions of dollars. As an example of the scope of the repair problem, consider this: Texas Instruments reportedly began a three year project in 1996, with 70 staff members assigned full-time to tackle the problem for their products and systems alone.

### A 'technological emergency'

Like industry, DOE takes the Y2K issue quite seriously. According to an official department document on the issue: "By definition in 36 CFR [Code of Federal Regulations] 1236.14, the technological emergency eminent [sic] in the year 2000 dilemma qualifies it as a potential national emergency that can seriously degrade or threaten the national security of the United States. If the year 2000 problem is not addressed in a proactive manner, the impact to the Federal Government could be insurmountable. The ultimate decision as to whether a system is mission-essential to an organization, DOE, and/or the Federal Government is the responsibility of each site system Program Manager. The failure to conduct an analysis of computer application and systems and making determinations as to the risks involved relating to the year 2000 technology emergency may result in the adverse impact mentioned above."

## Potential Year 2000 issues for networks and desktop systems

Summary of the Year 2000 issue based on a recent Lockheed Martin analysis. For more details, see Sandia's Year 2000 Web page (accessible from Sandia's Internal Web home page).

Hardware/Software	Recommendation	Comment
Apple machine	OK	All have tested OK
Unix machine	OK	All have tested OK
HP-UX 10.01, 10.10, 10.20	Upgrade v.10.30	Not century compliant. Upgrade available by 2Q97.
386 machine	Replace	Have BIOS bug (see Technical Issues section for details).
486 machine	Replace 1/3 Repair 2/3	Estimate 1/3 have permanent BIOS and 2/3 have upgradable BIOS.
Pentium machine	Repair 1/2 OK 1/2	Estimate all have upgradable BIOS and 1/2 have BIOS with date bug.
Netware 3.11, 3.2, 4.1	Upgrade	None century compliant. Upgrades available 4Q96.
Lotus cc:Mail	Upgrade	Not century compliant. Upgrade promised before 4Q99.
Lotus Notes	Upgrade	Not century compliant. Upgrade promised before 4Q99.
MS Windows 3.1	Upgrade	File manager displays dates in 21 st century as garbage. Rest of OS is OK.
MS NT	OK	All have tested OK.
MS Office	Upgrade to 97	Works with 4 digit years, assumes different centuries using 2 digit years.
User written applications	Review	All user written applications need to be reviewed for century compliance.
Other	Review	Any Device that has electronic circuitry may have a century assumption built in to it.

## Computers not only devices prone to Y2K problems

From an analysis by Lockheed Martin on Year 2000 issues:

Computers, routers, telephone switches, software, and other items normally associated with computers are not the only devices at risk. Basically, any device that has electronic circuitry may have a century assumption built into it. This includes automated lighting and air conditioning circuitry, sprinkler systems, elevators, test equipment, satellites, transmitters, security systems, fire monitoring systems, teller machines, etc.

In some cases, these assumptions may not matter. For example, if a sprinkler system

thinks it is 1900, it will still turn on and off at about the same time. Unfortunately, in many cases an invalid date will generate an error and in these cases what happens next will depend on how the programmer handled the error (if at all). The program may just stop (in a security system, no one is allowed in or out of the building), get caught in a loop (in Italy a teller machine began ejecting money when an invalid date was encountered), or signal an emergency (fire sprinklers going off on all the desktop equipment). For these reasons, non-computer related equipment needs to be checked as well.

Mike Eaton, Sandia's Chief Information Officer, says the Y2K issue is "potentially, but not necessarily, a major problem for us. To ignore it would be disastrous, but we're not [ignoring it]. It'll take some serious attention and resources to make us come out whole on the other side.

"So far," Mike says, "we're in the discovery phase of trying to find out how big the problem is. The important thing from my perspective is to try to have the problem owned by the program managers that are close to the resource. We want to make sure that the value judgments about how the resources are applied to the problem are made in the project teams and are part of organic project plans.

"What we don't want to have happen — and I emphasize don't — we don't want to try to solve this with a spike in indirect dollars. We want to solve this by asking the program owners to make value judgments in the resident programs and

*"So far we're in the discovery phase of trying to find out how big the problem is."*

resident databases and applications so that the right tradeoffs are made in the program areas."

The Labs' Investigation and Remediation Project, as mandated by DOE, is reviewing and developing solutions for Sandia's mission-essential systems. That process is on track to meet several time-critical milestones, Carol says. Ultimately, after Y2K problems are identified, a remediation plan for mission-essential systems must be implemented by Jan. 1, 1999.

Carol notes that an already-planned transition in October 1997 to commercial, off-the-shelf business applications, such as PeopleSoft for human resources management, will get Sandia off the hook on many Y2K compliance issues.

"We have a good basis to start from on our corporate business applications," says Gerald Esch of Database and Applications Support (4823), "since most of our business applications have been developed in the last ten years. We're thankful we aren't facing the issues that the federal government (e.g., IRS, Social Security Administration, Treasury) faces with hardware and software systems that are two and three decades old."

The Investigation and Remediation Project, says Carol, has ambitions that go beyond the DOE mandate to fix systems that would cause a failure in business operations, such as Payroll, HR, IPS (Integrated Procurement System), and FIS (Financial Information System). The project also aims to serve as an information clearinghouse and awareness-raising focal point on Y2K issues for all Labs' mission-critical systems.

That's a big challenge because, as Carol notes, no one is quite sure exactly which operating systems and applications are actually in use at Sandia. To get a handle on the subject, the project has established a site on the Internal Web. An interactive form is accessible from the site; it is designed to help project members collect information about Labs software and systems with an aim to determining the scope of Y2K exposure. Individual Sandians can learn more about Y2K issues at the following Web site: <http://www-irn.sandia.gov/org/div4000/ctr4011/y2k/y2khome.htm>

At this site, you can also complete a survey to help the team determine the scope of Y2K issues at Sandia.

### Don't try this at home

"When the clock turns over to zero-zero," Carol says, "you can either have things quit or give you erroneous calculations. The second one is almost worse because if your system 'blows up,' at least you know you've got a problem."

The classic example of a Y2K problem is a pension payment: You're eligible for a pension payment now, but when the date field turns over to "00," the software thinks you haven't been born yet and thus not are entitled to a pension.

That's a fairly obvious example, but the Y2K dilemma can cause much more subtle errors, says project team member Mike Blackledge, Manager of Quality Engineering Dept. 12326. The erroneous date fields might lead to mistakes in calculations that you wouldn't notice right away, he says. By the time you did determine you had a problem, its effects might have become quite significant, leading to untold consequences and huge potential liabilities.

And, Mike says, even testing for Y2K compli-  
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ance might fit into the "don't try this at home" category — unless you're sure you know what you're doing. He tells the story of one do-it-yourselfer who cranked his clock ahead to see what would happen. The test couldn't be "untested" — all his software licenses were invalidated and his system locked up. Another person had a Y2K-like problem when his network backup program, unbeknownst to him, became an "erase most current version" — not exactly what you want in backup security.

Just finding the problems in computer code is not as straightforward as one might think. Date fields may turn up in all kinds of places within software code, not just in code points that are clearly date-related. How you find those lurking two-digit date fields is a real challenge. There are an increasing number of diagnostic tools becoming available to help debuggers do their work, Mike says, but even the tools have limits. Much code, at Sandia and elsewhere, will ultimately have to be reviewed line by line.

### Nested dolls

In fact, the whole Y2K issue, as one begins to look into it, comes more and more to resemble a *matryoshka* — the enigmatic Russian nested doll: Peel off one level only to find there's another level within, and within, and within.

For instance, notes project team member Susan Schear (4011), your own desktop PC may check out fine — it may be Y2K-compliant, as they say. But your network may have Year 2000 problems you don't know about (as in the "erase most current" backup example above). In other words, Susan says, "Just because I'm okay and you're okay individually, doesn't mean we're okay when networked together."

And the problem isn't limited to Sandia systems; all of

Sandia's suppliers and customers have a stake in mutually Y2K-compliant systems. And if that's not enough, consider this: "When you think of the Year 2000 issue," Susan says, "you naturally think of desktop systems, but that's only the most obvious source of potential problems. All of our control systems — for heating, for elevators, wherever we have microprocessor controls integrated into systems — in all of those systems we are potentially exposed to Y2K problems. All of that has to be checked."

Mike warns that there is a common fallacy that could prove troublesome to the unwary or the unwise. The fallacy? That the Y2K problem is confined to older, so-called legacy systems. Wrong. If you're using a 386-based system, for example, replace it. Okay, maybe you'd expect that. But a

*"Just because I'm okay and you're okay individually, doesn't mean we're okay when networked together."*

### Sandia's Y2K project mission statement and team members

Mission statement of the Year 2000 Investigation and Remediation Project: *The Year 2000 may adversely affect Sandia software, hardware, and communication systems if they use two-digit date calculation fields. This project will publicize the problem and act as a corporate clearinghouse for solutions, provide a structure for investigating the corporate impact of this problem, estimating the cost required to correct problems, and defining potential implementation alternatives.*

Here are the current project team members: Carol Harrison (4011), project coordinator; Susan Schear (4011), Mike Blackledge (12326), Laney Kidd (2615), Gerald Esch (4823), Julie Perich (4823), Christine Morgan (7003), Doug Buck (10503), and Lucille Forster (3650).

## Mission-essential? DOE guidelines help identify areas where Y2K compliance is critical

Following are examples of criteria that can be used to help determine if applications or systems are mission-essential. The examples are not all-inclusive and each DOE organization may have site-specific criteria. The examples should all be read with the prefix "Whose loss or interruption would have an adverse affect on the:"

- National security of the United States or Department of Energy programs.
- Safe operation of nuclear power production facilities or control and accountability of nuclear materials.
- Control of nuclear facilities and nuclear weapons access.
- Maintenance of safeguards and security programs, including Department protection of classified information and restricted data.
- Department's financial stability, such as potentially large financial losses that would cause an inability to perform the mission or an estimated large expense to be incurred by performing the mission by other means (i.e., large overtime pay expense for manual processing).
- Protection of health and safety of the public and DOE and DOE contractor employees, and the protection of the environment (i.e., monitoring radiation levels, maintenance of records of personnel exposures to hazardous material, etc.).
- Maintenance and protection of Departmental security interests: property; lands; buildings; equipment; research and development; fire protection; health protection from hazardous materials; surveillance of nuclear facilities and radioactive wastes; and medical treatment of human patients.
- Compliance with federal regulatory requirements and data that must be regularly reported to Congress and/or other federal agencies.

- Mobilization, protection, and distribution of the nation's fuel resources — coal, natural gas, crude oil, petroleum products, and electrical power — and their production and distribution systems in order to promote national defense or maximize domestic energy supplies.

- Provision of emergency restoration of the manufacture, assembly, transport, and control of nuclear weapons or devices.

- Management, maintenance, or power production of national energy resources deemed critical or hazardous (i.e., nuclear); the Strategic and Naval Petroleum Reserves; and development and maintenance of national recovery plans for fuel production/distribution and electric power production/distribution.

- Monitoring of foreign relations essential to the reviewing of applications under the standby mandatory international oil allocation regulations and of domestic and international energy markets in coordination with the Energy Information Administration to detect any conditions that may herald a potential or impending energy emergency situation.

- Protection of the privacy of individuals on whom the Department of Energy keeps records, including security clearance documentation for DOE and DOE's contractor personnel.

- Availability and protection of records essential to the preservation of the legal rights and interests of individual citizens and their government.

- Management and operating and other contracts that call for acquisition, management, and/or use of computing resources, as provided by law and/or contract.

- Operational readiness for military effort and civil defense activities during a national emergency.

486-based system? A Pentium-based system? Certainly those ought to be Y2K-compliant, no?

No. A Lockheed Martin analysis conducted in late 1996 suggests that one-third of all 486 systems will need to be replaced due to a Y2K BIOS (basic input/output system) bug, and the others will need to be updated via an upgradable BIOS. Likewise, half of the Pentium machines on people's desks will need to be upgraded. In the realm of applications, the Lockheed Martin audit found (among commonly used Sandia tools) that Lotus cc:Mail is not Y2K-compliant, nor is Lotus Notes. Upgrades are promised before the fourth quarter of 1999.

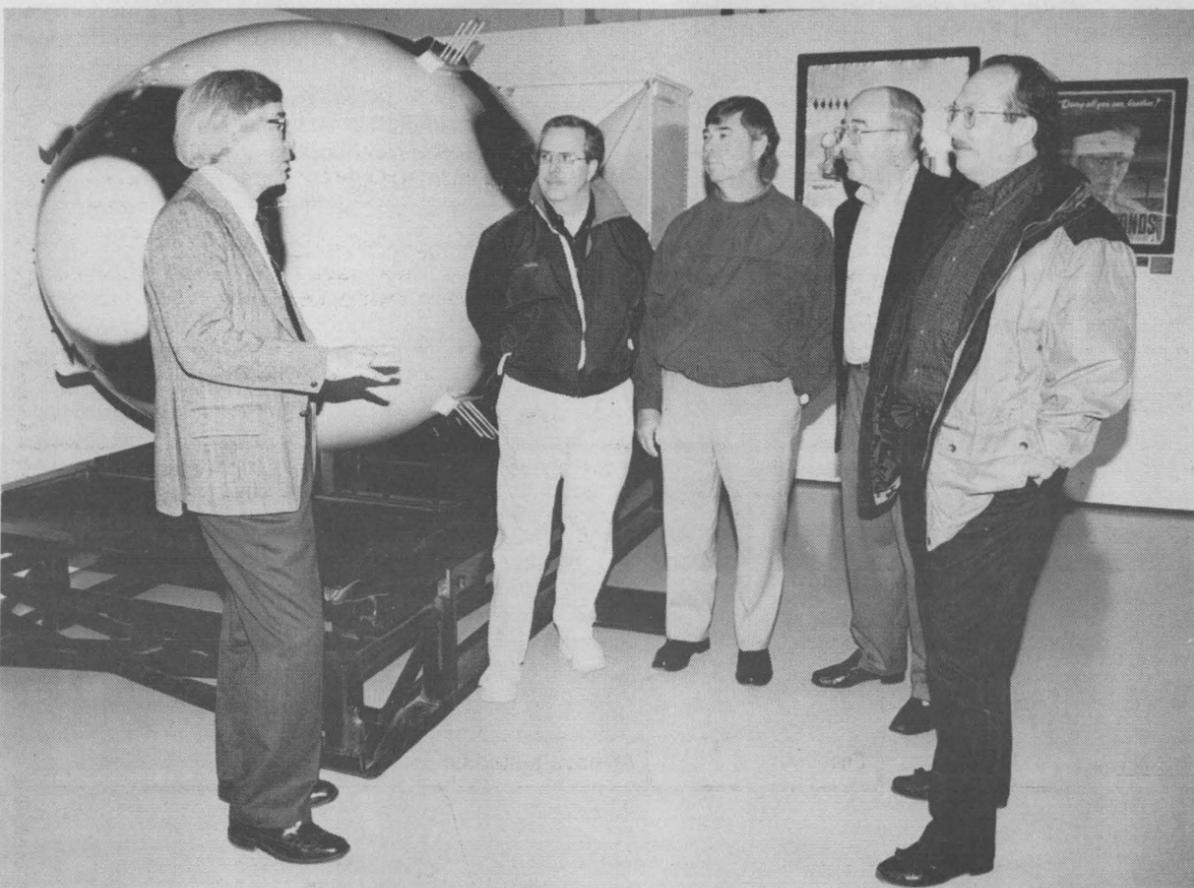
MS Office should be upgraded to Office 97 for full Y2K compliance, as should Windows 3.1.

Carol emphasizes that the project team needs Sandians' assistance and involvement in tracking down the pesky Y2K bugs in the Labs' systems.

"There's so much out there, we can't possibly begin to inventory it without a lot of people's help," she says.

Mike agrees, adding that time is beginning to be a real factor in identifying and resolving the Y2K issues at Sandia.

"This is one milestone you can't let slip," he says.



ETHICS OFFICERS — During their recent meeting in Albuquerque, ethics officers from Lockheed Martin Energy/Environment Sector entities toured the National Atomic Museum. Here four of them listen to Sandia Ethics Director Charles Tapp (12700), left, describe the Fat Man atomic bomb. From left they are Frank Blowe, Lockheed Martin Hanford Corp.; Steve Johnson, Lockheed Martin Specialty Components, Inc.; John Bigelow, Energy/Environment Sector ethics officer; and Ken Block, Lockheed Martin corporate ethics director.

# Nuclear security

(Continued from page 1)

physical security systems to be used in nuclear laboratories, generating stations, and vehicles that transport fissionable materials. Important contributions have also been made by managers Terry Olascoaga (5824), L. Thomas James (5823), Steve Scott (5511), and John Gronager (5504).

"There's an element of urgency in protecting this material," says Rebecca, "given the significant economic and political changes these countries are undergoing."

The DOE program, performed in conjunction with engineers from other national laboratories, is budgeted for approximately \$112 million for fiscal year 1997. Projects are ongoing.

The technical assistance program is a priority of DOE's Material Protection, Control, and Accounting programs. The name sounds bureaucratic, but the relationships and precautions involved are complex.

The programs were developed during the last five years through agreements between governments, agencies, or laboratories, under the oversight of DOE.

## Security improvements

At the Lithuanian power station, Sandia, under the direction of engineer Roger Showalter (5823), led construction of an inspection pit area somewhat like that of a 10-minute oil change bay. Incoming vehicles must drive through the bay, where they are checked from below for bombs.

In addition, sensors detect intruders entering the area on foot. Video monitors, cameras, and an upgraded central alarm warn of intruders into protected areas. Hand-held radios help the guard force communicate. Aluminum-covered wooden doors are gone, replaced with steel doors. Radiation monitors at exits scan workers for pilfered nuclear materials.

Sandia completed the system installation of the project in August 1996.

Sandia efforts to date also have:

- Completed a "quick fix" — announced in January 1997 by officials of the Republic of Georgia — at a nuclear research reactor to hinder theft of nuclear fuel rods. Each rod is as thick as a pencil, as long as a yardstick, and convertible into weapons-grade fissionable material. The project, begun in January 1996 and completed in two months, included installation of a massive brick obelisk, about three feet on a side and as tall as the door it guards, to prevent the door from being easily opened and fuel rods pilfered. The project, meant to provide temporary security until a more far-reaching agreement is concluded between Russia and Georgia, was directed by Sandia engineer Chris Robertson (5845).

- Demonstrated improved rail car security. In September 1991, 40 high-ranking Russians toured a rail car that had undergone a large number of security enhancements. The tour climaxed with

activation of two advanced mechanisms that would delay any infiltrators attempting to take over the car.

- Completed the first system for protecting significant quantities of weapons-usable nuclear material at the Kurchatov Institute in Moscow — a preeminent physics institute of Russia — in December 1994. This work was completed in four months under the direction of J. D. Williams, Larry Predika (5845), and Ron Madsen (5821).

According to Vladimir Sukhoruchkin, head of the division of internal projects for the Institute, "The cooperation and financial support by Sandia National Laboratories is vitally important for the Kurchatov Institute RRC [Nuclear Safety Institute]. It makes our world a little bit safer [by helping] us speed physical protection upgrades of dangerous nuclear materials and keep them securely out of reach by people seeking unauthorized use. . . . It considerably improved physical security of dangerous nuclear materials at the Kurchatov Institute RRC."

In general, security systems for research laboratories and nuclear generating stations have been improved by installing security fences, motion sensors, video cameras, and display monitors, as well as access control equipment. Other simple preventive actions include bricking up windows; removing rubble, trees, and other natural and artificial structures within tens of feet of security fences; improving security procedures; and providing training in modern material protection equipment for local security forces.

Other successes included a demonstration system completed at Arzamas-16/All-Russian Scientific Research Institute of Experimental Physics (VNIIEF) in early 1995. Ivan Waddoups (5845) directed the physical protection work in this effort.



AMONG the physical security improvements at the Ignalina nuclear power plant in Lithuania is this inspection trench similar to a 10-minute oil change bay. From this pit, guards can inspect the undercarriages of vehicles entering or leaving the plant.

*"The cooperation and financial support by Sandia . . . is vitally important for the Kurchatov Institute. It makes our world a little bit safer."*

At the Physics and Power Engineering Institute at Obninsk, Mike Ford (5823) led upgrades at two reactors that contain several tons of highly enriched uranium and plutonium. The system was completed and demonstrated to US and Russian experts in October 1995.

Sandia engineers also upgraded research reactor security at the Latvian Academy of Sciences, Uzbekistan Academy of Sciences' Institute of Nuclear Physics, and at Belarus' Sosny Scientific and Technical Center, so that nuclear materials are protected in accor-

dance with international guidelines. The Latvian work, under the direction of Sandia engineer Chet Hine (5845), was completed in March 1996; the other two, under the respective directions of Sandia engineer Vern Romesberg (5845) and the duo of Mark Baumann (5736) and Roger Case (5823), were completed in September 1996.

Sandia engineers in 1996 completed the first phase of a physical security system, 54 kilometers from Moscow, at a nuclear fuel processing facility in Elektrostal, Russia. Mark Bishop (5823) directed a major portion of this work with assistance from a team of Sandia engineers.

## Human factors

"We realize that some of the improvements we're making are radically different from the types of security systems with which technicians in the former Soviet Union are familiar, and it may be hard for them to fully understand what we're doing," says Mark Soo Hoo (5318), one of the first Americans sent to Eastern Europe three years ago to begin securing the nuclear materials.

To allay this fear, and also to make sure the materials will remain secure after American support is reduced, Sandia provides training on operating, testing, and maintaining the systems and also encourages local suppliers to be part of maintenance support.

"While early arrangements proved bureaucratic and slow-moving, scientists in the former Soviet Union believe in the need to protect the

(Continued on next page)



MARK SOO HOO stands before the main entrance to the Ignalina nuclear power plant in Lithuania.



A GUARD at the Latvian Academy of Sciences Nuclear Research Center watches video surveillance monitors installed as part of central alarm station upgrades at the facility. Sandia and Los Alamos National Laboratory participated in the upgrades.

## Job title changes

(Continued from page 1)

concern that employees might feel they had been "promoted" or "demoted" by the process.

Because the purpose of the new system is to provide a fair and equitable classification of employees based on these criteria, not to overclassify or underclassify them based on factors such as education or years of experience, the IJS team had decided to use the numerical designators (I and II) for the first two levels in each ladder.

### More customer feedback

The change back to job titles that more closely resemble existing technical staff titles

again is the result of customer feedback, this time from managers being trained in the new structure during February and March. They say titles such as "Member of Technical Staff" and "Senior Member of Technical Staff" are more familiar and more acceptable to employees than the numerical designators. They also believe such titles have more meaning in the external market.

Ed notes that the emphasis during IJS implementation still is on placing each employee in accordance with the level criteria corresponding to that employee's duties. The number of career levels, classification criteria, and occupations are not being changed as a result of the title changes.

"We believe these changes reflect a quality process — listening to our customers and responding to their needs," he says. "This was a particularly emotional issue for many people, and

many of the managers who provided us with the original pilot feedback changed their positions on the subject. After considerable discussion, the IJS team concluded that changing the titles was the appropriate response."

### IJS still on schedule

Despite this change, IJS implementation is still on schedule.

As most managers complete their IJS training during the next few weeks (see final paragraph), employees should be discussing their placements in the new structure with their managers. As a result of these discussions, all employees are expected to be aware of their recommended placements before the end of the current performance year (June 30).

The recommendations won't be final, however, until members of the Sandia Quality Leadership Council (SQLC) review each division's placements. Notifications of approved placements will be mailed to center administrative assistants in August. The data will be entered into the human resources database on Oct. 1, when Sandia's new PeopleSoft software is implemented.

"Making such a change in our current human resources database would require a monumental effort and would affect the continuity of HR data reporting for the fiscal year," says Ed. "We need time to fully test the IJS data in the PeopleSoft system before that system goes online."

About 75 percent of managers so far have been trained in the IJS. Two makeup sessions have been scheduled at Sandia/New Mexico for managers who haven't yet attended: Tuesday, April 15, 8 a.m. - noon; and Wednesday, April 16, 1-5 p.m. These will be the last sessions scheduled. Managers who wish to sign up should call Karen Armstrong (3545) at 845-8379.

— John German

## The three IJS staff ladders

### Original IJS titles

#### Technical Staff Ladder:

DTS (Distinguished Technical Staff)  
PTS (Principal Technical Staff)  
TS II (Technical Staff II)  
TS I (Technical Staff I)

#### Laboratory Staff Ladder:

DLS (Distinguished Laboratory Staff)  
PLS (Principal Laboratory Staff)  
LS II (Laboratory Staff II)  
LS I (Laboratory Staff I)

#### Technologist Ladder:

DTNG (Distinguished Technologist)  
PTNG (Principal Technologist)  
TNG II (Technologist II)  
TNG I (Technologist I)

### New IJS titles (to be implemented Oct. 1)

DMTS (Distinguished Member of Technical Staff)  
PMTS (Principal Member of Technical Staff)  
SMTS (Senior Member of Technical Staff)  
MTS (Member of Technical Staff)

DMLS (Distinguished Member of Laboratory Staff)  
PMLS (Principal Member of Laboratory Staff)  
SMLS (Senior Member of Laboratory Staff)  
MLS (Member of Laboratory Staff)

DTNG (Distinguished Technologist)  
PTNG (Principal Technologist)  
STNG (Senior Technologist)  
TNG (Technologist)

(Continued from preceding page)

nuclear materials, and when we went to work at a laboratory-to-laboratory level, our mutual efforts at protection started to work," says Rebecca.

Mark remembers the first time he got off the plane in the former Soviet Union at a treaty verification project in 1988. "There was this terrible feeling as you gave your passport to the guard that you'd never get it back, that you'd never get back out."

But freedom changed everything.

For example, "They can't understand how we in a free society put up with background checks," says Mark. "They view background checks as a tool of a repressive society."

But since the removal of the continual surveillance practiced by the internal security forces, "now there's not only no money, police, or background checks, but there are potential markets for nuclear materials," he says.

The problem now is to help these formerly Soviet countries moving toward a more democratic basis to maintain control of nuclear materials and prevent proliferation to rogue nations.

### The view from home

Some Americans wonder if US tax dollars should be spent and security technology used to protect a former enemy's nuclear establishment, says Rebecca. The fear is that any technical help allows Russia to use its freed-up money to pursue other nuclear weapon capabilities.

"It's a tradeoff," says Rebecca. "We believe the number-one national security problem at present is the threat of proliferation of nuclear materials. That threat outweighs by orders of magnitude the threat that freed-up monies will be used for military purposes."

The safeguards of a cooperative program provide assurances that these technologies are used only to secure nuclear materials and not for military purposes, she says.

In the opinion of Sandia manager J. D. Williams, "I'm sure American citizens wondered at the end of World War II why the US was spending its money to rebuild Germany and Japan. They wondered until they saw what good trading partners the former enemies became. It wasn't the people we were concerned about, it

was their governments. Russia and the newly independent states also have the potential of becoming great trading partners."

The problem of the unauthorized spread of nuclear weapons and fissionable materials is not one of incompetence, he says, because Soviet guards adequately protected facilities in the past. But today's increased labor costs, reduced military support, and growing black market require greater reliance on modern devices to achieve a stricter physical security.

Sandia's involvement in this area is based on more than 30 years of experience in nuclear material, weapons, and facility security and protection. Sandia engineers have worked at more than 300 facilities in 38 countries. While Sandia takes a lead role in providing physical security at potentially at-risk nuclear sites, other US national

laboratories play lead roles in numerically accounting for fissionable material, as well as other important material control measures. Other nations, notably Japan and Sweden, have also provided personnel and material assistance.

## Welcome

New Mexico — Francisco Alton (7437), David Melgaard (1846)

## Retiree deaths

George Zimmerman (84) .....1553 .....Feb. 24  
Dorothy Washburn (80) .....3742 .....Feb. 26

## Sandia Web Watch



Sandia's newly redesigned External Web site offers Sandia employees and customers more information in a better organized and more attractive format, according to project leaders John Larson (4612) and Manny Ontiveros (12690). The redesigned home page has the

same address (URL) as the Labs' previous home page: <http://www.sandia.gov>. Existing bookmarks will automatically locate the new-look home page.

Manny and John say the home page now includes Sandia news highlights, which will change at least once a month, probably more often; a featured Web site (currently the Intelligent Micro Machine Initiative); a button listing major upcoming Sandia-sponsored conferences and symposia; and six hot buttons to primary subpages (another may be added later).

The subpages and a sample of the types of information on each:

- About Sandia — who we are, what we do, recent accomplishments, Sandia's planning documents, visiting us, and related sites.
- Unique Solutions — examples of how we partner with industry and other groups to provide

unique technical solutions to real-world problems.

- Working with Us — how various groups can work and contract with Sandia, including industry, small business, federal agencies, universities, and other Lockheed Martin companies.

- Contacting Us — employment information; primary Sandia departments that customers and others outside the Labs can contact, such as Media Relations, Community Involvement, and our Technology Partnership groups; and an employee locator that gives employee phone numbers, e-mail addresses, mail stops, and fax numbers.

- News Center — featured photographs, news releases, primary *Lab News* articles, *Sandia Perspectives* brochure, *Inside Sandia* newsletter, and Sandians' congressional testimonies.

- Search — a key word/phrase system for searching Sandia's Web pages.

The External Web redevelopment project is a joint effort of the Public Relations and Communications Center and the Integrated Information Services organization, with the advice and assistance of various groups and individuals throughout the Labs. Key contributors to the redesign effort include Marie L. Garcia (4524), Mark Gutscher (4911), Mona Aragon (12620), and Larry Perrine (12690, External Webmaster).

("Sandia Web Watch" is a *Lab News* series featuring news and developments about Sandia's Web sites.)

# Four Sandians among those recognized by Vice President Gore for catalytic converter research

*Sandia team makes strides for the Partnership for a New Generation of Vehicles*

By John German

Lab News staff

Four members of a Sandia research team have received special recognition from Vice President Al Gore for their work in support of the Partnership for a New Generation of Vehicles (PNGV), a national initiative aimed at developing affordable, fuel-efficient, low-emission "supercars" of the future.

The four — Steve Lott (6113), Tim Gardner, Linda McLaughlin (both 6210), and Steven Lockwood (1492) — are among 37 scientists from five DOE labs and Chrysler, Ford, and General Motors to receive medals from Gore during a March 31 ceremony in the Treaty Room at the Old Executive Office Building in Washington. Labs President C. Paul Robinson attended.

"We are putting the 'pedal to the metal' on the creation of technologies for new vehicles that will reduce air pollution, increase fuel efficiency, and decrease American reliance on imported oil," said Gore in announcing the first PNGV awards, to be given annually to a government/industry team that achieves significant technical progress toward PNGV goals.

## Low emission catalytic converters

New Secretary of Energy Federico Peña attended the ceremony and congratulated the award recipients, particularly those representing the five labs. "This collaboration means that America's auto industry can now accelerate its effort to establish a lion's share of the world market for a new generation of [vehicles]," he said.



VICE PRESIDENT GORE presents Sandia team member Linda McLaughlin her award.

"Vice President Gore seemed pleased with the winning project's contributions to reducing air pollution and increasing fuel efficiency, and with the progress being made for PNGV in general," says Steve Lott.

The award citation recognizes significant progress toward development and eventual commercialization of technologies for advanced catalytic converter systems, which are necessary to meet current and emerging federal standards for vehicle emissions. (Catalytic converters are used in auto exhaust systems to chemically convert pollutants produced by the combustion of fuel in the engine to less harmful constituents, which exit from the tailpipe as exhaust.)

"Essentially, we are in a worldwide race to develop a catalytic converter that will enable lean-burn engines to meet stringent emissions standards," Steve said in an April 26, 1996, *Lab News* article.

A major PNGV challenge is reducing nitrogen oxide (NOx) emissions from a new family of lean-burn engines. ("Lean burn" refers to the amount of fuel injected into an automobile's combustion cylinders.)

The new PNGV catalytic converter technology being developed is more energy efficient and aims to reduce NOx emissions to levels mandated by the Clean Air Act. Members of the award-winning government/industry team are investigating lean NOx catalyst formulations, including use of such materials as aerogels, zeolites, and hydrous metal oxides (HMOs), a Sandia specialty.

The Sandia researchers are using their expertise in HMOs, a family of chemicals that, when incorporated with catalytically active metals, are ideally suited for catalytic converter applications. Those characteristics include a high cation (a positively charged ion) exchange capability, high surface area, and flexible process chemistry — HMOs can be synthesized as bulk material or as a coating preparation.

As part of the Sandia project, promising catalyst systems were fabricated on a small scale using



SANDIA MEMBERS of the award-winning government/industry catalytic converter team pose with Secretary of Energy Federico Peña and Labs President C. Paul Robinson following a March 31 ceremony in Washington. Seen in the photo are (left to right) Steve Lott (6113), Paul Robinson, Peña, Steven Lockwood (1492), Linda McLaughlin, and Tim Gardner (both 6210). (Photos by Kathy Lott)

HMO coating and ion exchange techniques, and similarly tested. The best catalyst systems were then evaluated on a larger scale in both bulk and coated forms.

One of the strengths of the Sandia effort, says Steven Lockwood, was the ability to scale-up the HMO coating and ion exchange processes to a full development-size catalytic converter. This scale-up, he says, is important to automakers because it demonstrates the manufacturability of Sandia's HMO-based catalyst processes and allows actual engine testing of these catalyst materials.

Harren Gandhi, technical fellow and manager at Ford Motor Company's Scientific Research Laboratory, says, "Steve Lott and his team have done an outstanding job in a short time delivering hydrous metal oxide catalytic technology that is every bit as good as, if not better than, other technologies we see out there."

## Tripling fuel efficiency

The other DOE labs whose researchers were honored as part of the winning government/industry team were Argonne, Lawrence Livermore, Oak Ridge, and Los Alamos. The team was selected for the award by an independent panel of the Society of Automotive Engineers.

"[The PNGV initiative] includes many such joint research programs," adds Gandhi. "It's an exceptional achievement that five national labs and three car companies can pool their scientific knowledge in an aligned manner for [improved] catalytic converter systems."

The PNGV was established in 1993 with a federal investment of \$300 million, which was matched by the United States Council for Automotive Research (USCAR), a collaboration among Chrysler, Ford, and GM. Seven federal agencies and 20 government labs, led by the Department of Commerce, as well as more than 300 automotive suppliers and universities, are participating in the government/industry 50/50-cost-shared initiative.

PNGV's vision is to develop and select automotive and manufacturing technologies and processes for a new generation of vehicles that triple the fuel efficiency and maintain the performance, size, and utility standards of today's vehicles while meeting all mandated safety and emission standards.

"The Partnership for a New Generation of Vehicles will produce new cars for a new century," said Gore. "It is a shining example of the public good that comes from cooperative ventures among industry, government, and communities."

## ! Take Note

The June Music Festival has changed its name to Chamber Music of Albuquerque to better describe the organization's broader musical and educational activities that now take place at various times of the year. Chamber Music of Albuquerque continues to present the June Music Festival at UNM's Woodward Hall as its primary event. The 56th season opens Friday, June 6 (8 p.m.), and Sunday, June 8 (4 p.m.), with the American String Quartet and guest artist, clarinetist Charles Neidich. On its second weekend, June 13 (8 p.m.) and 15 (4 p.m.), the Festival once again welcomes the Guarneri String Quartet. The final weekend, June 20 (8 p.m.) and 22 (4 p.m.), presents the Takacs Quartet. For more information and tickets, call Chamber Music of Albuquerque (1504 San Pedro NE, Albuquerque, NM 87110) at 268-1990.

## Fun & Games

**Running** — The American Lung Association of New Mexico and Glaxo Wellcome are sponsoring an Asthma Awareness Day on Sunday, April 13, at the Albuquerque Academy, with a special appearance by Jackie Joyner-Kersey, an asthmatic three-time Olympic gold medalist. Events begin with a "Run for Asthma Control" at noon and a free "Asthma Fair" at 1 p.m. "Run for Asthma Control" features 8K and 3K runs, 1K fun run, and a 3K race walk. The fair provides an opportunity to learn the most up-to-date asthma self-management information from physicians. Medical personnel will determine actual peak flow zones, test metered-dose inhaler techniques, and discuss environmental triggers and new medications. For race information, call 256-3625. For Asthma Fair information, call the American Lung Association of New Mexico at 265-0732 (or 1-800-221-LUNG).

# Sweeping changes in store for Sandia's business practices between now and Oct. 1

## Electronic commerce to become the norm on Sandia desktops

By Bill Murphy

Lab News staff

Over the next few months, and especially beginning on Oct. 1, Sandians will see the implementation of a number of dramatic, largely inter-related changes in the way the Labs conducts its day-to-day business and the way individuals interact with the Labs and with each other.

These changes represent the realization of high-level decisions made by Sandia's senior management. In various forums over the past two years, for example, Labs President C. Paul Robinson and Executive VP John Crawford have stressed the need to revamp Sandia's business practices to reduce costs and cycle times. Likewise, the Labs' strategic goals, adopted last summer, emphasize the need for structural changes to make the Labs more effective and efficient in the post-Cold War arena. At the same time, VP-level owners have championed the cause of implementing best business practices, taking advantage of broad-based electronic commerce and on a Labs-wide basis.

In a recent statement on changes in the Labs' business practices, Executive VP John Crawford said, "As the Sandia management team, we have collectively committed to reducing our overhead costs through the year 2000 while continuing to meet our customer commitments. A major part of our cost-reduction plan is dependent on the application of modern computer and information technology. Further automation of our administrative processes, enabled by ubiquitous desktop computer communications, should offer efficiencies which provide cost reductions while minimizing adverse program impact."

Essentially, the business process changes coming on line over the next few months position the Labs to:

- Streamline and simplify operations.
- Adopt best business practices, bringing Sandia's administrative functions more closely into line with private sector processes.
- Operate more cost-effectively, consistent with Sandia's Curtis Commitment — to reduce indirect expenditures by \$250 million over five years (FY96-2000).
- Implement recommendations of red team reviews of the Labs' human resources, finance, and purchasing processes.

### 25 initiatives in five areas

The changes in Sandia's business practices will include approximately 25 initiatives within five general areas: human resources, purchasing, finance, technology, and policy. While some of the changes are driven by a reexamination of business rules, many also correlate with new electronic business applications.

Electronic-based or not, the changes have been facilitated by a corresponding overhaul, streamlining, and simplification of the Sandia Laboratories Policies (SLP) and Operating Instructions (OI) framework. A simplified Corporate Business Rules system is being implemented; eventually, all SLPs and OIs will be eliminated and their content, if necessary for the Labs' operations, will be replaced by new business rules documents. (*Lab News*, March 28)

Desktop applications, though, are central to much of the imminent change. Charlie Emery, VP for Human Resources Div. 3000, points out that more than 90 percent of the

initiatives coming on line by Oct. 1 "will rely on a new IIS [Integrated Information Services] infrastructure."

As such, the ultimate success of the implemented changes, Charlie says, relies heavily on strong partnerships among human resources, finance, purchasing, and IIS, with strong support from the Sandia Quality Leadership Council.

### PeopleSoft software

PeopleSoft human resources software, for example, is a commercial, industrial-strength application that supports process changes in the following areas:

- Integrated job structure
- Reengineered staffing processes
- Revised personnel action approvals
- Leave administration changes
- Biweekly payroll
- Standard labor rates
- New pay stub format
- Employee self-service via Web and telephone
- Tracking of nonbase funds

Some of these process changes *could* have been achieved without new software, but PeopleSoft's beauty and utility is that it integrates these processes, says Charlie.

Other changes in store: electronic purchase requisition; Web-based cost transfer; electronic travel/business vouchers; represented 401(k) plan; a move to Windows 95/NT platforms.

(Further communications — town meetings, a dedicated Web site, *Weekly Bulletin* and *Lab News* articles — between now and Oct. 1 will focus on these and other process changes in more detail.)

Although it may appear that an inordinate number of changes are occurring essentially overnight, in fact, the shifts coming this year are the result of years of thought, planning, and implementation.

As one departmental manager involved in the implementation of the changes puts it: "The soil for this has been prepared for a number of years."

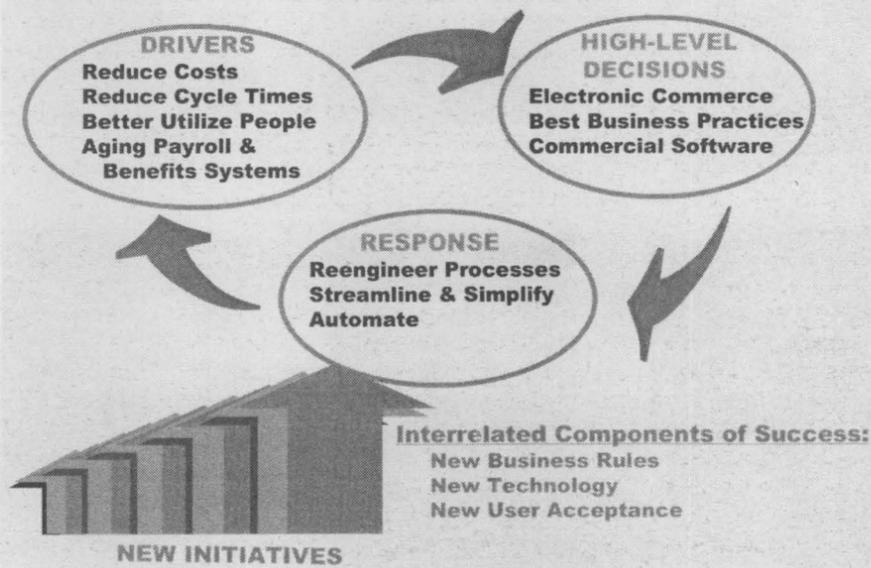
### A convergence of factors

The changes are coming seemingly all at once because of a convergence of factors: technological capability; leadership commitment; Lockheed Martin business experience; DOE and taxpayer expectations; aging, nonstandard software that needed to be replaced; red team reviews determining that several processes are not in sync with industry practices; and others.

"The timing is right for a lot of this to happen at the same time," says Karen Gillings, a manager in Staffing Dept. 3535. She emphasizes that although much of the change in processes is tied to computerization, automation for its own sake was not the goal.

"We took the opportunity to re-examine everything we do, to streamline and to simplify; you might say we're cleaning our closet after 40 years of accumulation."

### CHANGING SANDIA'S BUSINESS PROCESSES Putting It In Context



## Feedback

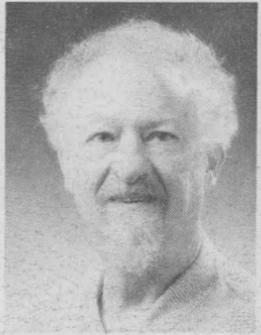
*Q: The November 1996 Metal Trades Communicator contains an item titled "The Happy Worker." This item illustrates the MTC's complete disregard for Sandia management and by extension (theoretically) the Sandia corporate values. The traditional automatic antagonism between management and union at Sandia is well known, but actually putting a story like this in print reveals a complete disregard of professional ethics on the part of the union. This type of thing may be funny to union members who see Sandia management as the enemy no matter what the circumstances, but it is irresponsible and has no place in an environment where mutual respect would produce the best working conditions for all the "happy workers" at Sandia. Does Sandia just roll over and not rock the boat when this disrespect is displayed so openly, or does anybody from Sandia management actually make some kind of response and try to bring the antagonists closer together?*

A: I can understand your feelings concerning the negative material printed in the November *Metal Trades Communicator*. However, labor unions are given great latitude regarding the content of the material they choose to distribute to their membership and are protected from company retaliation by the labor laws.

Actually, the Sandia-based unions are quite restrained with regard to their communications compared to most large industrial unions that routinely attack their companies and management on a very vicious and personal level. To their credit, our unions have not, as a general practice, engaged in that tactic. In addition, the subject communication was issued during contract negotiations, which is historically a time in which unions typically dramatically increase their negative communications in an effort to secure both membership and community support for their bargaining objectives. The only response the Laboratories could have legally engaged in was to issue our own communication condemning their negative attempt at humor. This approach would result in nothing but an escalation of negative communication from the unions and, quite frankly, plays into their bargaining strategy. Although I admit it would feel good to aggressively respond, our policy is to ignore such communications rather than encourage a barrage of additional negative communication that would only serve to embarrass the Laboratories.

— Robert Fraser (3560)

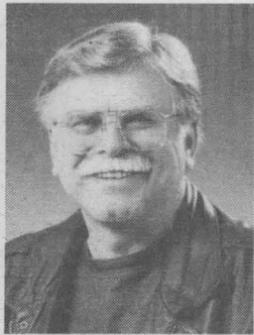
## Recent Retirees



Dave Pierce 34  
2671



Ruth Ronan 17  
12303



Martin Konkel 35  
5749



Bob Alvis 37  
2165



Marlyn Sterk 31  
2415



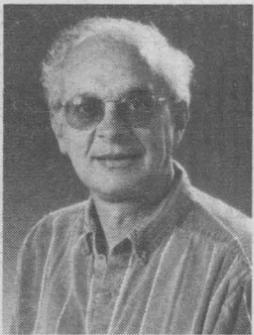
Ben Johnson 20  
5912



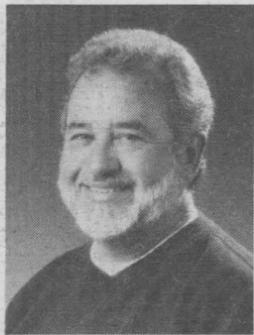
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Jose Castillo 28  
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John Weinlein 35  
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Greg Silva 35  
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Jerry Cuderman 31  
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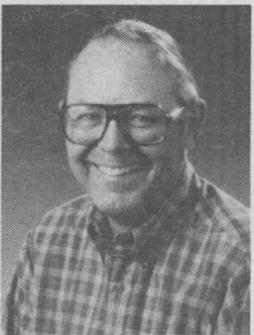
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Keith Gawith 33  
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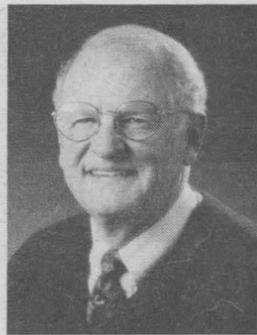
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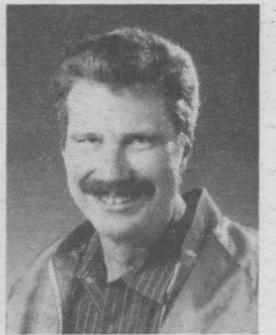
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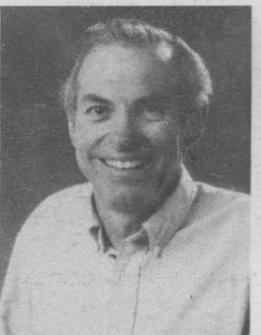
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Chuck Gibbon 30  
1204



Jay Snelling 31  
1304



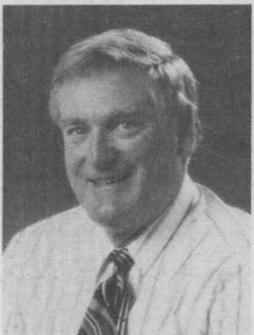
Tom Plummer 31  
7923



Dick Sons 31  
1231



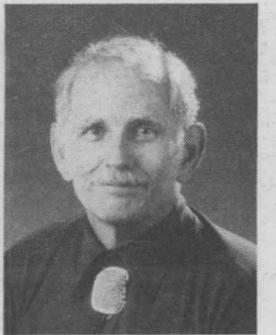
John Rosborough 35  
2671



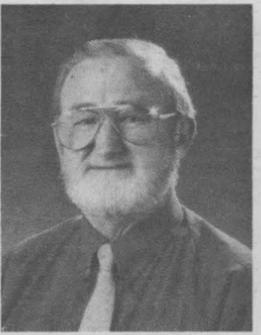
Herb Filusch 41  
5716



Gerry Rohwein 36  
9323



Harold Gottlieb 35  
5921



Howard Jones 39  
2151



John Souza 45  
2151



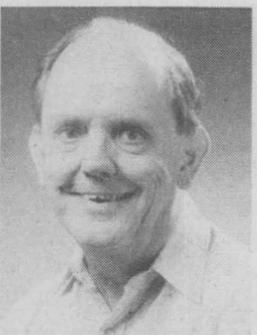
Tom Oakes 39  
2663



Robert Ewing 35  
5914



Charles Miller 25  
7842 (see page 2)



David Williams 30  
6421



Jim Baremore 31  
1900



Art Lynch 34  
7577

### ! Take Note

Retiring and not seen in *Lab News* pictures: Leonard Casaus (1315), 28 years; Frank Chavez (14403), 30 years; Vadare Cornelison (12120), 39 years; Frank Jaramillo (1481), 20 years; Sharon Metzger (1824), 28 years; Arlene Padilla (1001), 36 years; Hampton Richardson (1128), 30 years; Robert Rye (1114), 22 years; Tex Samuelson (9719), 40 years; Nancy Spear (7527), 16 years; Judith Wills (1544), 39 years; Paul Brannon (1128), 30 years; Richard Miller (1486), 32 years; and Walter Worobey (1471), 26 years; and David Zagar (9573), 32 years.

### Fun & Games

**Golf**— The ninth annual Cadillac Invitational Golf Tournament benefiting the National Kidney Foundation of N.M. is scheduled for Monday, May 5, at Tanoan Country Club. Shotgun start is at 1:30 p.m. Teams must have USGA handicap index of 43.0 or more. One team member must have USGA handicap index of 8.0 or less. Call 266-4573 for registration forms. The first place team wins four round-trip tickets and a chance to qualify for Nationals at Pebble Beach resorts.

# Sandia Classified Ads Sandia Classified Ads Sandia Classified Ads Sandia Classified Ads

## MISCELLANEOUS

- TRUCK BUMPER, heavy-duty, painted, fits late model GM, \$30. Wilde, 281-7027.
- LASER DISC PLAYER, Marantz Model LV520, AC-3 capable, plays CDs, pristine copy of 2010, documentation, \$800 new, used 5 times, asking \$450. Campbell, 281-0744.
- BOY'S ELAN SKIS (150 cm), Marker M-18 bindings, Nordica ski boots, size 6-1/2, Scott poles, excellent condition. Anderson, 897-2772.
- BLACK LEATHER COUCH, never used, from Krause's, 62-in. long, 36-in. deep, cost \$800, asking \$450. Branstetter, 292-5978.
- TRAIN TABLE, for Model trains, \$25. Kelly, 293-2475.
- TWO LEATHER RECLINERS, by Lane, off-white, high back, less than two years old, \$500 ea. Hubbard, 275-1549.
- WOMAN'S OVERSIZED MACGREGOR GOLF CLUBS, 2+ yrs. old, 3-PW & 1, 3, 5W, excellent condition, \$150 OBO. Ricci, 256-7872.
- AYSO JUNIOR REFEREE UNIFORM, w/flags, great condition, medium-size, \$20. Rockwell, 884-4206.
- WAGON WHEEL, used for lawn landscaping, buried lower quarter, best offer accepted. Duncan, 271-2718.
- SHOTGUN, Remington Model 1100, 6-shot, semi-auto, \$350. Hensinger, 237-2677.
- LANDSCAPE GRAVEL/ROCK, free, 3/4-to-1-in. round, gray rock & small-size red pumice rock, you load & it's yours, take some or all. Dwyer, 898-9061.
- GOLF CLUBS, 3-SW Tour Model II, frequency-matched standard-length shafts & lie, good condition, \$100. Vigil, 271-1328.
- LABRADOR RETRIEVER PUPS, yellow females, black females, black male, AKC, hips & eyes guaranteed, \$500 ea. Calloway, 292-5959.
- LITTLE TIKES ACTIVITY GYM, excellent condition, \$50. Filter, 823-1232.
- SOFA, LOVESEAT & CHAIR, gold color, good condition, \$275 OBO. Gonzales, 842-1688.
- HOTPOINT ELECTRIC RANGE, good condition, \$50; exercise bike, like new, \$40; baby stroller, \$10. Neugebauer, 294-1922, after 5:30 p.m.
- FILL DIRT, clean, excellent, great compaction, Taylor Ranch, free. Chavez, 857-1653.
- OLYMPUS CAMERA, Infinity SuperZoom 300, fully automatic 35mm autofocus lens/shutter, built-in zoom lens; Olympus 38-105mm F4.5-6 lens, \$275. Kovarik 897-2188.
- SECTIONAL COUCH, recliners both ends; desk, sofa sleeper & loveseat, entertainment center w/matching speakers. Jean, 833-2165.
- GAS RANGE, w/overhead microwave, \$125; electric range, free-standing, \$50. Burton, 857-0824.
- GAMES, Lucasfilm's Loom, Learning Company's Spellbound & Ancient Empires, Castle Master, Oregon Trail, Welltris, KQ2, \$3-\$10. Oishi, 293-9478.
- BIKE SEAT FOR BABY/TODDLER, free to family who will use it. Hatch, 897-3589.
- REFRIGERATOR, Whirlpool, 19.6 cu. ft., almond, \$75; waterbed, king, \$85; rifle, Winchester, .300 mag., Model 70, BOSS, scope, \$900. Parr, 292-5019.
- BASS GUITAR, classic '66, Fender Jazz, non-original finish, bridge, all else stock, case, \$1,000 OBO. Brooks, 275-0056.
- BOXER PUPPIES, AKC-registered, good pedigree, parents on premises, dew claws removed, 1st shots, ready now, \$300. Lopez, 873-4094.
- TRUNDLE BEDS, good condition, twin-size, Scandinavian teak wood, good mattresses, \$200. Hoge, 884-0054.
- FENCE GATE, new, 5-ft. wide, 6-ft. cedar stockage, on steel frame, w/steel posts & hardware, \$75. Krause, 858-1289.
- FURNITURE, 3-piece bedroom set: bed, dresser, vanity, \$300; cedar chest, \$200; 2 bookshelves, \$80 set. Cossin, 262-0633.
- FAST-TRACK EXERCISE MACHINE, like new, cost \$280, asking \$140. Barr, 822-0671.
- SOUTHWEST VOUCHER, good until June 4, 1997, \$250. Baldo-Pulaski, 345-0432.
- DOG RUN, portable, chain link, 6' x 6' x 4', \$50; medium-dog carrier, plastic w/handle, \$15. Jones, 899-0642.
- ELECTRIC GENERATOR, Coleman 5000 plus, used once, cost \$600, asking \$495 cash. Babcock, 299-3121.
- NORDICTRACK WALKFIT, like new, save over \$200 retail, \$400. Wangerin, 889-3542.
- '72 PLYMOUTH VALIANT SHOP MANUALS, original 2 volumes plus operator's manual; Toboldt's *Fix your Plymouth*. Moss, 298-2643.
- COFFEE TABLE, 2 end tables, smoke glass & chrome, excellent condition. \$200. Haines, 293-8911.
- VACUUM/FUEL PUMP PRESSURE KIT, \$30; rear disc-brake caliper tool, \$50; full-fielder alternator test kit, \$120. Mays, 1-800-659-1779, then 844-5432.
- GERBILS, 2 adults & 2 youngsters, w/cage, free. Ashwill, 888-3562.
- SEARS CRAFTSMAN ROTOTILLER, 3-hp, good condition, \$175. Nelson, 881-0148.
- PORTABLE FISHFINDER, one-piece, \$125; M1 .30-caliber carbine, \$175. Madole, 298-6081.
- WINDMILLS, 6-ft. Aermotor, rebuilt, excellent condition, \$1,250; like-new 6-ft. Dempster & galv. tower, \$1,800; 2-yr. guarantee both. Conklin, 847-2280.
- GOLF DRIVERS, Yonex 200ADX, Callaway Warbird 11°, R-shafts graphite, \$125 ea.; Ping Eye 2 irons 1, 3 thru SW, \$325. Bear, 881-7128.
- CHROME PROGRESSIVE WHEELS, 15 x 10, relatively new, \$200. Teske, 822-9162 or 878-2108 (pager).
- WEIGHT BENCH, bench press & leg curl, lightly used, \$25. Claassen, 271-8274.
- MITSUBISHI COLOR TV, 40-in., w/oak cabinet, good condition, \$1,000. Moya, 293-7959.
- MARCY EXERCISE MACHINE, \$300; 2 Motobecane 10-spd. bikes, w/accessories, \$100 ea. Brosseau, 286-1969.
- TWIN DAY BED, white-pipe style, "Country Hearts" w/trundle & one mattress, 3 years young, \$180. Skinner, 281-7027.
- HUNTING RIFLES, 30-06; triple oak dresser, w/mirror, like new, \$425. Marder, 291-8140.
- EPSON PRINTER, Action Printer 3250, \$100; disc drive IBM Model PS/2 55SX, \$1,500. Torres, 869-3159, ask for Tony.
- YORK PEPPERMINT PATTY VENDING MACHINES, new in boxes, paid \$240 ea., asking \$100 ea. or 60 for \$5,000. Frazier, 345-7189.
- TWIN MATTRESS, brand new, Royal-Pedic, 100 percent cotton, coil-spring, extra firm; Simmons Beautyrest twin, 1-yr. old. Levan, 293-0079.
- NOTEBOOK PC, Pentium 75, 11.3 SV-GA color, 24MB RAM, 540 HDD, 4X CD, touchpad, 1 yr., Windows 95, \$950. Ennis, 836-0504.
- COMPAQ PC Presario, Intel 486/66MHz, 8MB RAM, CD-ROM, 425MB disk, monitor w/built-in speakers, 9.6 modem, for word processing & home finance. Lagasse, 298-0977.
- IBM ELECTRIC TYPEWRITER, excellent condition, newly refurbished, \$75 OBO. Martinez, 831-0876.

## TRANSPORTATION

- '90 NISSAN MAXIMA, AC, PS, sunroof, leather interior. Hunter, 865-5745 or 864-9495, call Jeff.
- '74 VW BUG, excellent condition, low original mileage, like new, original paint, new tires, \$3,500. Olona, 884-0156.
- '88 ACURA INTEGRA SE, 2-dr. HB, 5-spd., power everything, sunroof, new rims/tires, Clarion stereo/cassette, \$6,800. Lovato, 296-2473.

**DEADLINE:** Friday noon before week of publication unless changed by holiday. MAIL to Dept. 12640, MS 0165, FAX to 844-0645, or bring to Bldg. 811 lobby. You may also send ads by e-mail to Nancy Campanozzi (nrcampa@sandia.gov). Call Nancy at 844-7522 with questions. Because of space constraints, ads will be printed on a first-come basis.

### Ad Rules

1. Limit 18 words, including last name and home phone. (We will edit longer ads.)
2. Include organization and full name with the ad submission.
3. No phone-ins.
4. Use 8 1/2" by 11-inch paper.
5. Type or print ad; use accepted abbreviations.
6. One ad per issue.
7. We will not run the same ad more than twice.
8. No "for rent" ads except for employees on temporary assignment.
9. No commercial ads.
10. For active and retired Sandians and DOE employees.
11. Housing listed for sale is available without regard to race, creed, color, or national origin.
12. "Work Wanted" ads limited to student-aged children of employees.

- '85 OLDS CUTLASS CIERA, AT, AC, PS, low miles, good condition, \$2,000. Creel, 839-7335.
- '93 MAZDA MX-3 GS, sunroof, cruise, 5-spd., 6-cyl., 68K miles, great shape, \$8,500. Georg, 281-2480.
- '94 HONDA PASSPORT EX sport utility vehicle, 4WD, 27K miles, perfect condition, loaded, below book, \$17,500. Roseth, 856-6964.
- '88 PONTIAC BONNEVILLE SE, 73K miles, 2 owners, excellent interior, \$4,500. Barnes, 265-2836.
- '95 FORD CONTOUR GL, metallic cherry red, PW, PS, AC, cruise, sunroof, remote keyless entry, 4-dr., 5-spd., \$14,000. Trujillo, 293-6284.
- '93 GMC JIMMY, leather interior, AC, AT, custom paint, loaded, AM/FM, \$11,900. Fraser, 281-2766.
- '88 MUSTANG LX HATCHBACK, 5.0L V8, AC, tape, PL, PW, superb condition, \$4,000. Herding, 298-5040.
- '90 PLYMOUTH VOYAGER SE, V6, AT, AC, PW, PL, cruise, AM/FM/tape, 57K miles, great condition, \$6,500. Kulju, 299-8182.
- '92 ISUZU TROOPER LS, 4x4, V6, AT, AC, PS, PW, fully loaded, CD & cassette, alarm, 50K miles, excellent condition, \$15,500 OBO. Ramos, 856-8233.
- '85 TOYOTA MR2, loaded, 4-cyl., 5-spd., 42K original miles, AC, PW, sunroof, immaculate condition, \$4,975. Salazar, 281-6825.
- '90 DODGE PICKUP D250-LE, 3/4-ton, extended cab, 75K miles, bucket seats, trailer brakes, shell, bedliner, \$8,700. Gonzales, 864-7706.
- '82 DODGE RAM 150, short bed, 4-spd., V8, camper shell, 61K original miles, \$3,000. DePoy, 345-5247.
- '95 IMPALA SS, dark cherry, CD, leather, 18K miles, \$21,900 OBO. Sanchez, 293-7246.
- '88 CHEV. ASTRO VAN, 4.3L V6, excellent condition, clean, \$5,200 OBO. Frey, 296-4182.
- '66 DATSUN 1600 ROADSTER, convertible, runs great, recently restored, hardtop, a classic, \$500 under book, \$3,075. Pletta, 281-4277.
- '92 SUBARU LEGACY, silver station wagon, 4WD, AC, cruise, AM/FM cassette, 49K miles, excellent condition, \$11,000. Watts, 294-8624.
- '87 DODGE ARIES LE STATION WAGON, white, stereo/tape cassette, excellent condition, repair record, 128K gentle miles, \$1,875. Graham, 865-9427.
- '92 CHEV. PICKUP, like new, AC, PB, PS, V6, 5-spd., custom wheels/shell, running boards, \$11,000. Moya, 268-7914.

- '95 DODGE NEON SPORT, 5-spd., like new, 7.5K miles, has everything, ABS, power sunroof, warranty, \$11,000 OBO. Henderson, 254-1803.
- '76 JEEP PICKUP, 3/4-ton, 4WD, 40L V8, dual exhaust, extra tank, \$3,000 OBO. Rogers, 293-5726.
- '95 SATURN WAGON, DOHC, AT, AC, PS, PB (ABS), PW, PL, AM/FM cassette, leather, airbags, 1 owner, 22K miles, traction control, \$14,500. Landrum, 237-9196.
- '86 NISSAN PICKUP, 5-spd., 4-cyl., AC, AM/FM cassette, custom camper shell, rebuilt carb, runs great, \$3,000 OBO. Thomas, 281-1581.
- '88 HONDA CIVIC HATCHBACK, blue, 5-spd., AC, 85K miles, great condition, very reliable, \$4,300 OBO. Potter, 856-3359.
- '87 NISSAN PULSAR NX, runs great, clean, 5-spd., AC, Kenwood CD, tint, T-tops, below NADA at \$3,100. Mitchell, 837-1233.
- '93 CHEV. CAPRICE CLASSIC, V8, fuel-injection, AT, F.A.C., \$8,100. Martin, 343-9719.
- '90 FORD TEMPO, 4-dr., PW, PD, AT, 73K miles, runs great, good condition, \$2,900 OBO. Bragg, 275-3172.
- '89 AUDI 100, loaded, PW, PS, AM/FM cassette, very good condition, maintenance records, \$5,995. Harrison, 897-0658.
- '88 MAZDA 323, sunroof, 5-spd., AC, great mileage, 4-dr., book \$2,825, asking \$2,250 OBO. Lopez, 291-0010.
- '66 CJ5 JEEP, reconditioned, V6 engine, \$3,800. Snelling, 292-7460.
- '93 GMC SIERRA PICKUP, V8, AT, 54K miles, PW, cruise, AM/FM cassette, custom wheels, bedliner, extended warranty, \$14,500 OBO. Griego, 873-9750.
- '93 SUBURBAN, 4x4, 3/4-ton, 454 cid, 44km, black & silver, sacrifice at \$19,300. Sanchez, 293-7246.

## RECREATIONAL

- '95 HONDA CB1000, standard-style, water cooled, tint windshield, additional extras, like-new condition. Rasmussen, 266-1097.
- '79 COACHMAN MOTORHOME, Class C, 58K miles, roof air, generator, sleeps 6, full bath, \$7,000. Sifford, 869-3982.
- LASER SAILBOAT, w/trailer, \$750; 1/3-share Jeppesen/MDM FS100 IFR Simulator, \$150. Shapbnek, 281-5913.
- '88 WINNEBAGO SUPERCHIEF, 31-ft., 2 roof ACs, generator, awnings, microwave, queen bed, TV/VCR, storage, Chev. 454, 34K miles, \$22,000. Ward, 298-1180.
- '83 SUZUKI XN85 TURBO MOTORCYCLE, very rare, well-maintained, 14K miles, \$2,500 firm. Romero, 867-6444.
- CHILD'S MOUNTAIN BIKE, 18-spd. "jazz," w/24-in. wheels, excellent condition, \$110 OBO. Mehlhorn, 823-1437.
- CAB-OVER CAMPER, 9-1/2-ft., newly refurbished, potty, shower, refrigerator, sleeps 6, hydraulic jacks, rear towbar for boat, \$1,850 OBO. Marr, 345-4006.
- '94 HONDA XR650L STREET/DIRT BIKE, very fine condition, many performance modifications, 3,340 miles, \$3,500. LeGalley, 822-0676.
- '86 FIFTH WHEEL, 22-ft. Santa Rosa, AC, microwave, 3-burner stove, fully self-contained, \$5,500; hitch, \$200. Danclovic, 897-7964.
- '85 ELBKO DAY CRUISER, 22-ft., 140 Mercury in/out, \$5,000, consider trade for pontoon boat. Saladin, 894-0785.
- FUJI BICYCLE, 12-spd., Mixte frame, 53-1/2 cm, (21-in.), centerpull brakes, recent rebuild, \$100. Joseph, 822-0536.
- '71 PROWLER TRAILER, 18-ft., sleeps 4, refrigerator, stove/oven, sink, shower, toilet, new tires, \$2,700. Pacheco, 292-0490.
- '92 HARLEY DAVIDSON XLH-1200 SPORTSER, 5-spd., belt drive, new tires + over \$1,400 extras. Jaramillo, 865-7832.

- '94 HARLEY-DAVIDSON 1200cc, 5-spd. Sportster, other extras, adult ridden, 3,100 miles, \$8,000. Larsen, 292-7301.
- SCOTT MOUNTAIN BIKE, 18-in., new front shocks, great condition, \$250. Avila, 275-9572.

## REAL ESTATE

- 3-BDR. HOME, 1-3/4 baths, 1,425 sq. ft., fireplace, nice landscaping, clean, \$109,500. Simmons, 298-8510.
- 4-BDR. HOME, 2,480 sq. ft, NE, Eldorado school district, full brick, spacious eat-in kitchen, storage galore, lush landscape, \$167,900. Snyder, 296-5771.
- 2/3-BDR. CUSTOM HOME, Four Hills, 2 baths, authentic Southwest style, 3 kiva fireplaces, 2-car garage, den, 2,350 sq. ft., great views. Campanozzi, 275-5333, ask for Camille.
- 2-BDR. CONDO, Wyoming/Spain area, 2-story, garage, w/all appliances, large patio, pool, walk/bike path, \$73,000. Walters, 857-9767.
- 3-BDR. HOME, 1,000 sq. ft., NE Heights, Eldorado district, completely remodeled kitchen, backyard deck, great neighborhood, \$99,900. Justice, 275-7977.
- 4-BDR. RUTLEDGE HOME, on cul-de-sac, 1/3-acre lot, mountain view, 2,419 sq. ft., \$220,000. Nagel, 298-2779.
- 2-BDR. MOBILE HOME, 12' x 60', good condition, better than renting, must sell, \$6,500 OBO. Parra, 869-3416.
- 4-BDR. HOME, 1,600 sq. ft., 2-car garage, sun room, storage shed, updated, immaculate, Juan Tabo/Copper, \$123,500. Mayer, 299-8524.
- 4-BDR. NORTH VALLEY HOME, 3,038 sq. ft., 2 baths, 2 fireplaces, library, sunroom, separate 420-sq.-ft. workshop/studio, horses OK, 900 Solar NW, \$229,900. Orman, 344-5446.
- 3-BDR. CUSTOM HOME, 2,150 sq. ft., 2-1/2+1/4 baths, on 3.3 wooded lot, peaceful, hilltop acres, great views, woodstove, 2-1/2 yrs. old, \$220,000. Hatch, 281-0543.

## WANTED

- RECLINING CHAIR, comfortable & good condition. Conner, 281-9370.
- EXHIBITORS for Canterbury Craft Fair, April 25-27, church fund raiser, 425 University Blvd. Hughes, 296-8940.
- COLLEGE/HIGH SCHOOL STUDENT with license to watch 2 kids; ages 9 & 11, every other week in summer, I'll spring for the pool pass. Jennings, 268-8789.
- SEWING MACHINE, Singer Model 221, portable "Featherweight." Pace, 292-8249.
- BABYSITTER, responsible teenager to watch 3 active children, ages 6 & under, some day travel will be required, own transportation optional. Sartor, 858-2554.
- HANDYMAN, to do various odd jobs around house, throughout the year, flat or hourly rate negotiated. Kelly, 821-9680.
- GE ELECTRIC KNIFE. Beeler, 822-9485.

## LOST & FOUND

- LOST: Gold triangle-shaped earring, w/teardrop-shaped amethyst (purple stone) in center. Roach, 844-5226.
- FOUND: Seiko watch, credit union parking lot, 3/31/97, call & identify. Gomez, 844-7003.
- FOUND: Woman's wristwatch, water tower parking lot, 4/1/97, identify & pick up. Madole, 298-6081.

## SHARE-A-RIDE

- CEDAR CREST VANPOOL, has part-time & full-time openings, Frost Rd., N-14. Rentsch, 281-5017 or Burns, 281-3922.

## Sandia News Briefs

### Sandian edits book of scientific critiques of 'the UFO invasion'

A Sandian is lead co-editor of a just-published book that provides one of the few full-length evaluations from a critical, scientific point of view of claims of UFOs, alien abductions, and the "Roswell incident" crashed flying saucer story (which originated 50 years ago this July). Titled *The UFO Invasion*, the book is edited by Ken Frazier (12640), Barry Karr, and Joe Nickell and published by Prometheus Books, Amherst, N.Y. It consists of articles on these subjects published in the *Skeptical Inquirer: The Magazine for Science and Reason*, which Ken edits on his own time, with updates and other new material. It includes both a 1995 article and the 1994 US Air Force report that reveal that New York University balloon experiments launched from Alamogordo, N.M., in June 1947, headed by now-retired New Mexico Tech atmospheric scientist Charles B. Moore, apparently provided the original stimulus for the Roswell incident. In his introduction, Ken says the "UFO invasion" of the title is not meant to imply that we have been invaded by alien spacecraft. "But for the past half century we have definitely been invaded by reports, claims, and assertions of UFOs, disseminated widely by the . . . media, too often with little critical analysis."

### Sandians earn certification from National Property Management Association

Gary Harris, Robert Eldredge, Andy Martinez, Terri Roseth (all of Property Management and Reapplication Services Dept. 7617), Barbara Hoffman, and David DePolo (both of Logistics Services Program Office 7612) have been certified as Property Specialists by the National Property Management Association (NMPA). The certification is earned by meeting NMPA-established standards of performance, technical qualifications, and methods of evaluation for industrial and government property personnel. Peg Baca of DOE/AL earned the Certified Property Manager designation from the association.

Send potential Sandia News Briefs to *Lab News*, Dept. 12640, MS 0165, fax 844-0645.

### Sandia history book order form



I would like to order a copy of *Sandia National Laboratories: A History of Exceptional Service in the National Interest*. To reserve your copy, fill out the information below and send it, along with a check or credit card information, to the National Atomic Museum Store at the following address: P. O. Box 5800, MS 1490, Albuquerque, NM 87185-1490.  
Fax: (505) 284-4290; e-mail: namf@rt66.com

I am a Sandia employee (cost for employees \$12.50/copy).  
I wish to purchase \_\_\_\_\_ copy(ies). Amount of check enclosed: \_\_\_\_\_ or  
charge to: \_\_\_ Visa \_\_\_ MasterCard  
Card No.: \_\_\_\_\_ Expires: \_\_\_\_\_

Name: \_\_\_\_\_ Phone: \_\_\_\_\_ MS: \_\_\_\_\_  
Employee copies will be delivered to mail stops.

I am a Sandia retiree (cost for retirees \$10/copy + postage and handling fee of \$5).  
I wish to purchase \_\_\_\_\_ copy(ies). Amount of check enclosed: \_\_\_\_\_ or  
charge to: \_\_\_ Visa \_\_\_ MasterCard  
Card No.: \_\_\_\_\_ Expires: \_\_\_\_\_

Name: \_\_\_\_\_ Phone: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_

I do not want my copy mailed (price is then \$10/copy); I will pick it up at the National Atomic Museum after the announcement in the *Lab News* that copies are available.

## Coronado Club

April 10, 17, 24 — Thursday bingo night. Card sales and buffet start at 5 p.m., early birds' bingo at 6:45 p.m.

April 11 — German music dinner/dance, 7-11 p.m.; floor show, 8-8:30 p.m. of Die Polka Schlingles. \$7.95 all-you-can-eat buffet; steak or shrimp, \$8.95, served 6-9 p.m.

April 20 — Sunday brunch buffet, 10 a.m.-1 p.m. \$7.95 all-you-can-eat buffet. Kids 3-12, \$1, under 3 free. Music by Bob Weiler, 1-4 p.m.

April 25 — "Western Night" dinner/dance. \$7.95 all-you-can-eat buffet; steak or shrimp, \$8.95, 6-9 p.m. Music by Isleta Poorboys, 7-11 p.m.

## Labs history to be published; available in early summer

The Sandia History Program announces the publication of a one-volume history of Sandia, *Sandia National Laboratories: A History of Exceptional Service in the National Interest*. This general history traces Sandia's development from its Cold War origins during the 1940s to the present. Go to <http://www-irn.sandia.gov/organization/div15000/15102/hstrybk.htm> to view an excerpt from the book.

To be available in early summer, the 400-page history is heavily illustrated and provides information on the vast range of Sandia's programs. A reference copy will be sent to each department and above, but funding does not permit providing a copy to every Sandian.

The National Atomic Museum Store has agreed to handle distribution of the book while quantities last and will offer reduced rates to Sandia employees and retirees.

Prices will be \$17 for the general public, \$12.50 for Sandia employees, and \$10 for retirees.

An announcement will appear in the *Lab News* when the book is printed. Advance orders are being taken to ensure that enough copies are printed. Use the order form at left to reserve your personal copies. The deadline for orders is May 1, 1997. If you have any questions about the book, contact Corporate Historian Carl Mora (15102) at 844-8011.

## Take Note

New planets, black holes, alien life, and other topics are explored in "Mysteries of Deep Space," three new programs presenting the newest achievements in modern astronomy, on KNME TV-5 April 14, 21, and 28, 8-9 p.m. each night. Narrated by Stacy Keach, the series features live-action sequences, state-of-the-art computer animation, and high-resolution images from the Hubble space telescope and observatories around the world. On April 14, "To the Edge of the Universe" goes behind the scenes as a group of young astronomers use the Hubble space telescope to look deep into the origins of space and time and observe our universe racing away from us into infinity. On April 21, "Exploding Stars and Black Holes" presents astronomers using the latest technology in telescope size and design and refinements in supercomputer analysis to search for answers to questions such as: What is the nature of time? What is the ultimate fate of the universe? What are the unseen substances that make up so much of space? The program depicts astrophysical events, including supernovae, black holes, and shapes produced by the life and death of a star. In "The Search for Alien Worlds" on April 28, two young astronomers at the Lick Observatory reveal that other worlds are no longer the "stuff of dreams." They are part of a coterie of scientists who are using the newest optical instruments and most sophisticated techniques to add more than one planet a month to the original nine counted in this solar system.



GEARING UP FOR SUMMER — Tourists visiting the National Atomic Museum examine a model of the Enola Gay, the B-29 bomber that dropped the first atomic bomb on Hiroshima in August 1945. The museum is bracing for the first summer tourist season since undergoing major remodeling last fall. The "new" museum is built around a series of related exhibits designed to place the development of US nuclear weapons in a historical, social, and political context. In addition to displays of several generations of US nuclear weapons, the museum also features extensive outdoor displays of various delivery systems, including its latest addition, a massive Titan missile. Historical films and special-interest displays round out the museum's offerings. The National Atomic Museum is open to the public daily, 9 a.m.-5 p.m. (Photo by Randy Montoya)