Emissions from revolutionary tungsten photonic lattice far exceed Planck's law at near-IR frequency

Sandia researchers create lattice that emits energy greater than expected from 'ideal solid'

By Neal Singer

A tungsten filament built as a lattice has emitted considerably more energy at near-infrared wavelengths than the output ordinarily expected from solid tungsten when heated.

This greater output offers the possibility of a superior energy source for powering hybrid electric cars, electric equipment on boats, and industrial waste-heat-driven electrical generators.

Similar emissions, if realized at visible wavelengths, would mean more efficient lighting sources could be developed.

"Important, elegant work…"

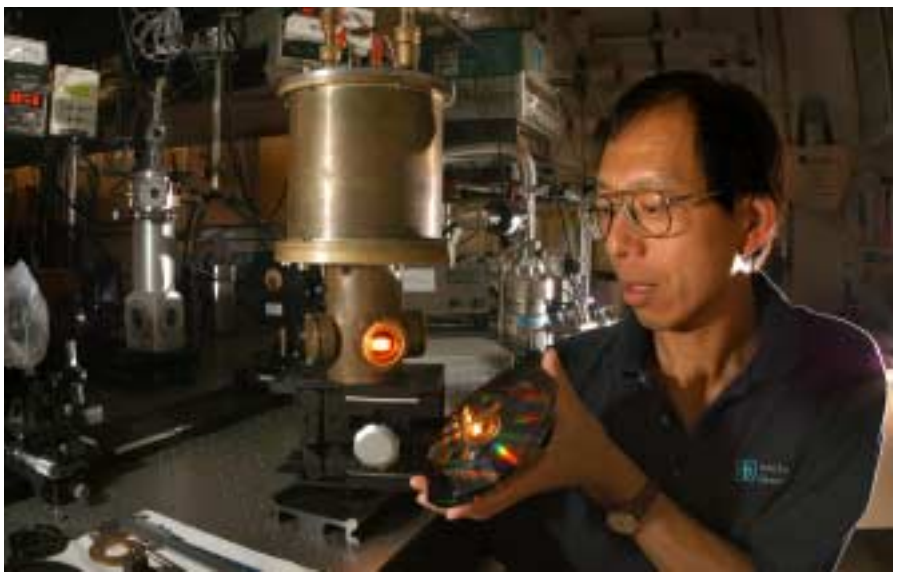
"This is an important and elegant work," says Cal Tech professor Amnon Yariv of the research achievement. Yariv is a member of the National Academy of Engineering and a leading figure in quantum optics research.

The Sandia laboratory demonstration, led by Shawn Lin (1743), at first seemed to flout a well-known law formulated a century ago by Max Planck, one of the founders of modern physics. The equation, called Planck's Law of Blackbody Cavity Radiation, predicts the maximum emissions expected at any wavelength from ideal solids.

It is these predictions, at least for the case of tungsten, that the Sandia group exceeded by a wide margin.

For the Sandia lattice heated in a vacuum to 1,250 degrees C — the typical operating temperature of a thermal photovoltaic generator — an optical-to-electrical conversion efficiency of 34 percent was calculated, based on spectral radiance measurements and a planar thermal photovoltaic model calculation. That figure is three times the performance of an ideal blackbody radiator, predicted to be 11 percent.

Electrical power density was calculated to be approximately 14 watt/cm squared, rather than three watt/cm squared expected from an ideal blackbody radiator. No deterioration of the tungsten lattice was observed, although long-term tests have yet to be run.



A TUNGSTEN PHOTONIC LATTICE glows in the background as Sandia researcher Shawn Lin inspects a disk that contains approximately 1,000 tungsten photonic lattice filaments. Most emissions from these filaments are still in the infrared range, in prime frequencies to improve the efficiencies of heat-driven engines like hybrid electric automobiles. (Photo by Randy Montoya)

The lattice itself can be visualized as a construction built of a child's Lincoln Logs, with tungsten "logs" of diameter 0.5 microns separated by 1.5 microns.

Says Kazuaki Sakoda of Japan's Nanomaterials Laboratory at the National Institute for Materials Science, "One of the most important issues in con-

(Continued on page 4)

Sandia LabNews

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Sandia National Laboratories

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Ten individuals, 20 Sandia teams named to receive NNSA Weapons Award of Excellence

Ten Sandia individuals and 20 teams will be awarded the National Nuclear Security Administration (NNSA) Weapons Award of Excellence in August. The awards honor exceptional contributions to the stewardship and management of the stockpile. Read about the award winners in Chris Burroughs' story on **pages 5, 6, and 7**.

Sandia's maturing Integrated Enabling Services initiative beginning to make its mark on Labs

Decreasing everyone's hassles, increasing agility are goals of IES

By Bill Murphy

You're a "direct" guy or gal who's got the go-ahead to embark on a new R&D project. You need people. You need offices. Labs. Equipment. Security. Telecon services. Financial services. Everything. What if, instead of trying to coordinate all of these things together from a laundry list of indirect Centers, you could pick up the phone and say: Help!? And the help was there? That'd be a pretty nice "what if."

Integrated Enabling Services. IES. You may not have heard the term, but over time, you'll notice the results. The promise of the initiative — launched in 2001 and now coming to maturity — is to make the "what if" happen: to make services faster to find and easier to get. The IES initiative is designed to address its self-identified "big four" issues related to helping the Labs be more effective in its mission work.

Deborah Mulligan (3522), a member of the IES implementation team, describes the big four: Agility, productivity, decreased hassle, and worth the cost. (Deborah notes that IES services must always demonstrate that they are worth the cost; that is determined by how — and how much — they enhance agility, productivity, and/or bureaucratic streamlining.

IES VP Lynn Jones (7000), in talking points developed to explain the rationale behind IES, says: "What we [Sandia] did in the past wasn't bad or wrong, but our planning shows the future will be different, and we must be prepared for that difference. . . .To meet the Labs' highest goal [to be the Laboratory the nation turns to first for technology solutions to the nation's most daunting challenges] all Sandia operations — mission and enabling service — must lead and adapt."

IES represents one of the ways the Labs is adapting.

In the way-distant past — maybe two years ago — the Labs operated under the concept that there are "direct" and "indirect" functions. Direct functions, as the name suggests, were those activities that related to Sandia's reason for being: technical R&D aimed at helping the nation secure a peaceful and free world through technology.

The indirect side of the house represented just

(Continued on page 12)

Paul Robinson comments on polygraph rulemaking

Sandia President C. Paul Robinson provides his invited response to DOE's proposed rulemaking about polygraphs on **pages 8 and 9** of this *Lab News*. Paul sent it to DOE Secretary Spencer Abraham June 12. DOE announced the proposed rulemaking April 14 as part of its response to the National Academy of Sciences report on use of polygraphs at DOE national laboratories.

PAUL ROBINSON

Center for Integrated Nanotechnologies jumps forward

By Neal Singer

Though ground has not yet been broken for the $75 million Sandia-LANL Center for Integrated Nanotechnologies (*Lab News* Aug. 9, 2002), CINT is open for business.

It is open because a "jumpstart" program supported by DOE will make approximately $1.5 million available to CINT management to distribute to Sandia and Los Alamos laboratory personnel working with "outside" researchers in nanotechnology.

Each of the five DOE Nanoscale Science Research Centers across the US received approximately $1.5 million in Office of Science funds for their own jumpstart programs.

Construction

Because CINT project plans are going well, Center director Terry Michalske (1040) was not dismayed at facing a DOE-mandated review before construction could commence.

"These are independent and highly qualified people who conduct these reviews," he said of the inspectors from Jupiter Corporation, of Wheaton, Md., contracted by DOE Office of Engineering Construction Management. Jupiter sent five inspectors with varying areas of technical expertise to Sandia for the entire first week of May.

One inspector, says Terry, was also doing an independent estimate for renovation of the

(Continued on page 4)

What's what

Between bouts with viruses and other cybernasties and the usual mayhem of keeping Sandia's vast computer network clean and working, Charles Shirley (9620) and Michael Schalip (9622) ran across an interesting website, which they passed along with an e-chuckle, and which is another indicator that there's an organized organization for every human undertaking — and they're all on the Web, somewhere.

Charles and Michael found the site for the Society of Government Meeting Professionals, which bills itself as "the only national organization in the United States dedicated exclusively to improving the knowledge and expertise of individuals who plan and execute federal, state, or local government meetings."

Opportunity: If there's not already an Association of Societies of Government Meeting Professionals, who better than one of us to fill that void? We all suspect there are no better meeting organizers, planners, executors, and summarizers than Sandians. To paraphrase Pogo, 'We has met the meeting expert, and he is us.'

* * *

If you watch the job postings, you might have noticed that the Satellite Data Processing group (5742) was looking to hire someone recently. The group needed an ARDU/ICADS GSSE. I don't know if the search was successful, but if it was, I hope they'll let us know at the *Lab News*. It's been a while since we've run a photo of an ARDU/ICADS GSSE and we wouldn't want to miss the opportunity.

* * *

My predecessor in this space, Larry Perrine, returned to it for the last issue — while I was vacationing — and raised a question about blue cheese: How can you tell if it's spoiled? True to form, a couple of Sandians addressed the issue.

Mindy Sampson (9904) found a website offering the following advice from the University of Florida Cooperative Extension Service: "Discard blue or other blue-veined cheese if you see mold growth different from the normal veining. Invader molds may appear as white, pink, green, blue, black or gray flecks of furry patches."

And from Sharon Gorman (2113): "Imported blue cheese (as from Italy) is creamy. When it spoils, it can turn a grayish color, but it usually turns pink around the edges. Domestic blue cheese is firm and when it spoils, it gets very soft (mushy) around the edges. Blue cheese is a mold-type cheese and it takes a long, long time to go bad."

Another matter explained.

* * *

And finally — thanks to Larry for filling in while I was away. It's always comforting to know you can get away for a few days and not worry about your work getting done. We in the PR "newsroom" are a close bunch and can always count on each other.

I won't bore you with tales of my vacation, but one night anchored near Tobacco Caye, just inside the reef off the southern coast of Belize, a school of barracuda swam back and forth under and all around our boat. I remarked idly to one of my friends and fellow crewmates that they were striking looking — sleek, silvery, graceful. Yeah, he said, they may look great, but you wouldn't want to jump in there and swim with 'em.

The oddest thing, though, was that at that very moment, I remembered that my friend Larry — who always has kind things to say about me — was filling in for me, allowing me to have a relaxing, refreshing time away from work. Thanks, Larry.

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

Sandia LabNews

Sandia National Laboratories

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LOCKHEED MARTIN

Congratulations

To Amy and Brian (2331) McMurtrey, a son, Benjamin James, April 21.

Jeana Pineau (6100) and Doug Brosseau (6218), married at Prairie Star, Santa Ana Pueblo, N.M., June 1.

Management changes announced in wake of independent security investigation

As the Lab News *was in final production late Tuesday afternoon, the following major changes in Labs management were announced:*

President C. Paul Robinson announced management changes prompted by the findings of an independent investigation delivered to Sandia on June 4. This independent investigation, headed by former US Attorney Norman Bay, looked into allegations that some internal security investigations were impeded or the investigators were retaliated against.

The changes effective on June 24 include:

• VP Dave Nokes (5000) has agreed to retire effective June 25, as vice president for National Security and Arms Control, as requested by Paul.

• Al Romig (1000), currently vice president for Science, Technology, and Partnerships, will replace Nokes;

• A replacement for Al will be announced soon;

• Patricia Gingrich, who has been director of Systems Assessment and Research Center 5900, has been reassigned to the Advanced Concepts Group where she will work on evolving counterterrorism strategies;

• Jerry Allen, a former Labs' executive staff director who retired from Sandia in December 2001, will return for at least six months as director of the Systems Assessment and Research Center, pending the appointment of a permanent director.

Paul announced these changes following an approximately three-week review of the 221-page Bay Report plus its hundreds of pages of associated exhibits. He said, "These were very tough decisions to make, in cases of great complexity."

Labs management, Paul said, is continuing to review and analyze the Bay Report to determine what additional personnel actions and policy changes may be appropriate.

"Changes, especially when unexpected, are particularly difficult," Paul said, "but they hopefully serve to assure continued public confidence and support for Sandia and all our programs. This has been a very trying experience. I know the changes we're making today will make us stronger."

Paul announced some "disturbing concerns" about management of the Labs' security force at a March 20, 2003, press conference [*Lab News*, April 14]. These included allegations that individuals had impeded internal investigations or retaliated against the investigators, as well as security incidents ranging from two security guards caught napping while on duty to the disappearance and reappearance of a set of keys, which is still under investigation.

Paul commissioned the Bay Report in August 2002.

Sandia signs agreement with Yale University to establish two engineering fellowships

Julia Phillips, Director of Sandia's Physical and Chemical Sciences Center 1100, signed an agreement last week with Yale University to establish two Yale University Excellence in Engineering Fellowships.

Paul Fleury, retired Sandia research vice president who is now dean of engineering at Yale, returned to the Labs to sign the agreement with Julia.

The fellowships, each with a $25,000 match from Yale University, will be used exclusively for student support.

"The goal of the fellowships is to encourage innovation in science-based, multidisciplinary research through support of outstanding doctoral candidates in engineering or applied physics," Julia said. "In making this pledge, we hope to strengthen our partnership with Yale University to encourage a new generation of scientists and engineers who can contribute to engineering and high technology in areas of national interest and critical need."

PAUL FLEURY and Julia Phillips sign the Yale University Excellence in Engineering Fellowship agreements.

The fellowships, which will go to doctoral students with an overall GPA of 3.5 or better, will be for two years. The first two awardees will be named within the next few weeks.

Sandia hosts multilab technology transfer conference

By Nancy Garcia

Calling the national laboratories "critical and integral parts of the homeland security mission," Mike Burns, head of the Department of Homeland Security's Office of National Laboratories, told attendees at a technology transfer conference organized by Sandia that the government instinctively looked to the labs in the wake of the Sept. 11, 2001, terrorist attacks.

Burns spoke at a San Francisco Bay Area meeting of the Technology Partnerships Working Group. About 135 people gathered at the three-day conference in which representatives of DOE laboratories focus on technology transfer issues.

Operating as a new federal agency for three months, the Department of Homeland Security pulls together some 170,000 people and $30 billion in annual budget to deliver a large mission with a strong emphasis on science.

Burns' office is under the Science and Technology directorate's Office of Research and Development, which is run by Maureen McCarthy. Burns said McCarthy "is very big on providing the nation with an enduring capability dedicated to homeland security."

"Science and technology are really an ace in the hole for this nation, and we are going to play that ace in the hole," he added.

What this means for the laboratories is that work will initially be carried out under the agreement between DHS Secretary Tom Ridge and DOE Secretary Spencer Abraham signed in February.

"There is some detail we are still working on about how the money will flow to the laboratories," Burns said. He also welcomed advice and recommendations as the processes and policies are developed to guide technology transfer.

Of the proposed $803 million budget in fiscal year 2004 for the DHS Science and Technology office, some $350 million is expected to fund industry and university work through the Homeland Security Advanced Research Projects Agency (HSARPA).

HSARPA would execute "extramural" programs that develop untapped capabilities at university-based centers and similar sites through grants, cooperative agreements, contracts and other arrangements. Intramural programs, meanwhile, would make use of unique capabilities at any federal laboratory that has a longstanding public investment in national security, Burns said. In this high-risk, high-payoff work, the labs would function as technical consultants through such agreements as joint sponsorships, direct contracts, and work-for-others types of projects.

GREETINGS — Mike Burns, right, shakes hands with David Goldheim, Director of Corporate Business Development and Partnerships Center 1300. Burns heads the Office of National Laboratories at the Department of Homeland Security and was keynote speaker at the conference.

Generally, labs cannot compete for HSARPA projects because they are assumed to have insider, "intramural" knowledge. "You guys will always be seen as a valuable partner, but don't look like you're trying to lead a charge," said Burns, who spent 16 years at Los Alamos National Laboratory.

One of the key sources of technology that may become available for licensing will be the Office of Systems Engineering and Development, where inventions will be integrated for deployment

"We are intent on stocking up first responders who may be responding to a crisis or trying to interdict one," he said. "Security will always be part of our work, especially threat and vulnerability assessment."

The FY04 funding request for countering "emerging threats" through longer-term research is $22 million. This work, for instance, could look at border crossings to detect special nuclear materials, especially shielded uranium, Burns said, and systems to interdict nuclear material smuggling through recommendations for conduct of operations. Also high on the wish list is a "fast detector," he added, for fires and gas clouds.

"We're not just looking at gizmos and James Bond stuff," Burns said. "We're also looking at organization, making sure the government comes together seamlessly."

A panel of six national lab representatives joined Burns after his talk for a discussion moderated by Craig Reed of the Secretary of Energy's Advisory Board. Reed remarked that it is "an exciting time for technology transfer" as the agency eyes a more robust role in technology partnering.

"I think we've done a good job of putting those mechanisms in place, such as how to use nuclear incident response teams for domestic incidents," he said.

T.J. Allard (50), who runs the Homeland Security office at Sandia, said borders are among the problems identified by Sandia to work on. Overall, T.J. said, the three weapons labs have decided to work together, as a single entity, with DHS. "The competition should be for ideas, not for funding," he said. "We're going to have to do it cooperatively."

Mike Kuliasha, director for homeland security at Oak Ridge National Laboratory, predicted that in five years the labs will become regional portals to other groups working in homeland security, serving a coordinating role.

The following morning, Craig Smith (8529) organized an industry panel discussion on building successful partnerships. Moderator Gerald Grafe of InLight Solution (formerly an attorney at Sandia) advised "reasonable expectations" for labs-industry partnerships that often seem like a perfect fit but can be difficult to create.

Speaking from the biotech perspective, F. Rod Stanley of FibroGen Inc. in South San Francisco said that technology transfer works, but the model is limited since it usually takes 15 years to get an invention to market. "The lifeblood of biotech is patenting," he added. "That very well could be the most important property that the biotech company owns."

Chuck Gwyn of Intel (also a former Sandia manager) spoke about the Extreme Ultraviolet Lithography partnership between an Intel-led industrial consortium and three Bay Area DOE labs. What helped was having unique capabilities at the labs and champions to smooth the way, he said. A difference in approach was that companies are used to paying for something they receive, but labs are paid in advance, not for achieving milestones per se, but for best efforts. "We have to bet on the future," he said.

Dick Steichen (1000), senior advisor of industrial programs at Sandia, joined the Labs two years ago after an executive career at Goodyear, which has had several successful partnerships with the Labs.

"We've learned a lot over the years," he commented about partnering at the Labs, "understanding the value and need as it relates to industry."

Sandia CaliforniaNews

An intellectual property primer

Kurt Olsen, Director of California Legal and Patent Center 11600, walked participants through the basics of intellectual property — ideas and inventions that can be licensed for royalties.

Dave Goldheim, Director of Corporate Business Development and Partnerships Center 1300, called intellectual property "the coin of the realm" when it comes to partnering with industry. Partnering, he added, "is the only way we can see our technologies bear fruit" since early-stage laboratory research is developed and marketed for use through commercialization by industrial partners.

Kurt separated intellectual property into four main categories.

First, he described patents, which protect an invention from unauthorized use by others for 20 years (or 14 years in the case of design patents, such as the decorative style of an athletic shoe). They can be manufactured items, new materials, processes (like a computer program), or "anything under the sun made by man," such as living organisms, like a research mouse with human cancer genes patented in 1988.

Another major category is trade secrets. Unlike patents, this protection lasts potentially forever, Kurt said, as long as they are kept secret. An example is the formula for Coca-Cola. Even if competitors copy the ingredients, the brand still has a marketing cachet since the formula is widely seen as "the most famous trade secret of all."

Overall, trade secrets are primarily any nonpublic information that gives a business an edge. Examples could include a unique machine, integrated-chip-making processes, a business plan, or a customer list.

Copyright, as the name implies, is the protection against copying. Kurt said the right originally lasted for the life of the author plus 50 years, but was recently extended, largely at the behest of the Disney Co., which had a "lot at stake" with the rights to Mickey Mouse. The Elvis Presley Foundation also got into the act, resulting in protection now that lasts 100 years past the life of the author.

Examples of copyright-protected work are technical articles, source and object code, a technical drawing, architecture, a movie, or a photograph.

Finally, one of the oldest categories of intellectual property is a trademark, which arose from trade guilds. Examples include icons of commerce and business tools recognizable by shape, color, sound, or representation in a logo. For example, the golden arches are a McDonald's logo; the shape of a Coca-Cola bottle represents a unique brand of cola; the NBC chime played at station breaks signifies that network; and the pink Owens Corning insulation connotes that brand.

"The color doesn't have anything to do with the function of the insulation," Kurt said, recalling that ads used a pink panther even though that animal didn't have an obvious connection to insulation, either.

One of the more recent additions to examples of trademarks is World Wide Web domain names — it is no longer permissible to claim a URL based on a company's name, as had been done in the early days of the web. Or, as Kurt put it, "Cyber-squatters, for the most part, have been put out of business."

Photonic lattice

(Continued from page 1)

temporary optics is the modification of the nature of the radiation field and its interaction with matter. [Shawn Lin's] recent work clearly demonstrates that even Planck's law — the starting point of the era of quantum mechanics [used to predict these interactions] — can be modified. To my knowledge, [Shawn's papers] are the first experimental report on this matter."

Sakoda's book *Optical Properties of Photonic Crystals* was published by Springer Verlag in 2001.

Cat vs. supercat

Modified, perhaps. But break Planck's law of radiation? Probably not, says Shawn. Rather, the work demonstrates the creation of a new class of emitters.

"To compare the amounts of emissions from a solid and a photonic lattice is like comparing a dog and a cat — or, a cat and a super cat," he says.

MIT physics professor John Joannopoulus, in response to a question from *Lab News*, had high praise for the work. "It is definitely not — how did you put it? — 'a small step forward'; it's really a leap forward. It is a very clever experiment that's completely believable. . . . I think it's an exciting experiment, very carefully done, and there's some really interesting new science here." Joannopoulus is a pioneer in photonic lattices and wrote the first book on the field.

Standing in his equipment-cluttered laboratory, Shawn — who with colleague Jim Fleming (1749) holds two patents for his tungsten photonic lattice work, with another pending — grins happily among the vandalized wreckage of a number of ordinary light bulbs from Kmart. His team pirates the bulbs' screw-in bases and glass filament supports for use as cheap, pre-made connectors and supports for the iridescent slivers of photonic lattices — the size and shape of ordinary filaments — created by his team and substituted for common filaments of tungsten.

"Look!" Shawn says with obvious anticipation, and flips a switch to where the reconstituted filament sits in a vacuum chamber.

In its little chamber, like a kind of witches' Sabbath for light bulbs, the bulb, though formerly dead, now glows again, but with a distinctly yellow light. The lattice filament, powered by only two watts, and with most of its output keyed to the infrared range at 1.5 to 2 microns, has enough of a tail into the visible spectrum for the lattice to glow. "We are that far along!" Shawn says with satisfaction.

If these results at 1.5 microns can be extended to the visible spectrum, ramifications of this work may help form the next generation of lighting after the currently more mature LED technology.

TUNGSTEN POSSIBILITIES — From left, Sandians Shawn Lin, Jim Bur, and Jim Fleming discuss the possibilities of tungsten photonic lattices as one, electrically driven, glows in the left foreground. (Photo by Randy Montoya)

…More than Planck dreamed of…

Shawn says that a heated photonic lattice subjects energies passing through its multiple links and cavities to far more complicated interactions than Planck dreamed of when he derived his formula that successfully predicted the output energies of simple heated solids.

For this reason, the output of the lattice can be considerably larger than of a solid, in frequency bands the lattice's inner dimensions permit to emerge. Theoretically, however, there are still unresolved questions as to how the process works without contradicting other physical laws. The observed radiation is the result of a more complex photon-tungsten interaction than the system Planck formulated.

Possible applications

Because sub-micron-sized lattices — which resemble stacks of very small, micron-sized garden lattices carefully laid one atop the other — can be fabricated cheaply with today's computer-chip technologies, the increased amount of energy available from lattices (also known as photonic crystals) is important to engineers.

A photonic lattice absorbing energies from a power plant generator's excess heat could release it at higher frequencies readily absorbable by the photovoltaic cell that powers electricity-driven engines.

While such engines — best known in the form of electric-powered cars — exist, their efficiencies have been much lower than hoped because their receivers cannot absorb incoming energies across the wide spectrum of infrared radiation generated as unwanted heat, but only from limited bands within the broad range. Here, the lattice could serve as a kind of funnel, forcing the heat radiation into predetermined frequency bands. When placed between the generator — be it solar, dynamo, or fire — and receiver, the metallic photonic lattice can be engineered to absorb energies, become thermally excited, and release them in only a few frequencies.

While some energy is lost in this process, it makes available the far greater energies that were previously unusable.

A year ago (*Nature*, May 2, 2002; *Lab News*, May 3, 2003), Lin's team showed that a tungsten lattice could gather absorbed energies at shorter wavelengths than ordinary tungsten could. Now, in papers accepted for publication by *Optics Letters* and *Applied Physics Letters*, Shawn along with Jim Fleming, Jim Moreno (ret.), and Ihab El-Kady (1743) show actual emissions. The emission measurements were performed with the technical assistance of Jim Bur and Jonathan Rivera (both 1743). Part of the earlier simulation of tungsten lattice's absorption properties was done at Iowa State University/Ames National Laboratory, in work led by Professor Kai Ming Ho.

The current use of tiny lattices to emanate energy in designated wave bands is a conceptual jump from their earliest appearances over a decade ago, when it was thought their major function would be to bend light without loss for telecommunications. Such lattices were built from semiconductor materials. In the case discussed here, semiconductor materials are used to form a lattice mold into which tungsten is poured. The semiconductor material is then etched away.

CINT

(Continued from page 1)

Supreme Court building in Washington. "He said that CINT is one of the best two [reviewed projects] he's ever been part of," said Terry.

The reviewers examined building plans for the 96,000-square-foot, one-story core facility to be built just north of Sandia west of Eubank, and the building requirements for the 34,000-square-foot gateway facility to be built at Los Alamos. They examined projected costs, proposed scheduling, requested technical equipment, and cooperation to date between the two giant labs. Then the inspection team drew up their own idea of scheduling and costs, which, as it turned out, closely approximated the CINT team's conclusions.

The Jupiter Corp.'s draft evaluation said in part, "CINT program validations provided an excellent opportunity to ensure understanding and documentation of design objectives. The success of the process is reflected in the quality of the Core Facility design and the Gateway Facility Performance Specification."

Two labs jointly manage

Groundbreaking for utilities is expected to take place this fall, with building construction scheduled to begin in spring 2004. Completion of the entire facility is targeted for early calendar year 2006.

Says Terry, "We're doing something Sandia and LANL have never done — not just work together but jointly manage a project."

The intent of the Jumpstart Program is to begin immediately to build the external user community of those conducting nanoscience research. The early start gives Center management the opportunity to learn how best to support laboratory nanoscience capabilities and provide access for external scientists, so that when the program is at full throttle, any bugs will be more likely to have been removed.

The initial funds for CINT-supported nano-research are about one-tenth the size the user program expected when CINT is fully up and operating, says Terry. "We expect $18-$20 million annually to support the technical activities that support the users: tech staff, technicians, postdocs, students, who work with external user community. People, in short, who provide capabilities will be the recipients of support."

Sandia and Los Alamos staffs are expected to be the principal recruiters of external researchers applying for research funds. "We can't sit and wait. We have to get out and stimulate these collaborations," says Terry.

CINT drew in the external user community when it hosted its Second User Workshop on June 5 & 6 at the Old Town Sheraton Hotel in Albuquerque. Neal Shinn, CINT's Interim Outreach Coordinator, declared the meeting "a huge success," with over 230 registered participants representing 30 states and 19 foreign countries. "Workshop discussions between laboratory staff and external scientists are already generating the foundation for new CINT user proposals," Neal said.

The three-step proposal process involves, first, a project application from an external scientist who has discussed the idea with a Sandia or Los Alamos CINT contact to ensure its technical feasibility. Second comes review by a scientific board — external to the laboratories — which asks: Why do this? Does it have scientific merit? And third, distribution of funds as available for the project.

"In the preliminary stage of CINT, we're not interested in receiving ideas for new projects from the broad internal laboratory community," says Terry, "but rather in leveraging existing micro/nano research involving Sandia and Los Alamos staff with outside researchers where, say, another graduate student or an additional, complementary technical approach might help.

"Later, when full funding commences, we will be in a position to explore major new research directions. If an external panel says it's good, you can get resources."

The key issue, he says, will be how the proposed project combines nano and micro. Solving such nanoscience integration challenges is a core mission of CINT and will require the best talent from both inside and outside the national laboratories.

"The members of our external CINT Governance Board and Science Advisory Committee are strongly supportive of this vision and are working with us to create a National User Facility that impacts important science challenges for the nation. We will contribute to the National Nanoscience Initiative with results that play a significant role in energy, national security, and environment. Outcome of new science generated by CINT should have a spectacular impact on the DOE mission. "

More CINT information can be found at http://cint.sandia.gov or http://cint.lanl.gov.

Ten individuals, 20 Sandia teams to receive this year's NNSA Weapons Award of Excellence

By Chris Burroughs

Ten Sandia individuals and 20 teams will be awarded the National Nuclear Security Administration (NNSA) Weapons Award of Excellence during a ceremony in New Mexico and videolinked to California in August.

The Sandia/New Mexico ceremony will be Aug. 12 from 3-5 p.m. in the Steve Schiff Auditorium. NNSA Director Linton Brooks is invited as a speaker.

The NNSA Weapons Award of Excellence was created in the early 1980s to give special recognition to those at the laboratories and plants directly associated with the stockpile modernization program. Today the awards honor exceptional contributions to the stewardship and management of the stockpile.

Here are the 10 Sandia individual winners.

Rob Allen


ROB ALLEN

Rob Allen (8112) has led the development of programs to adapt the nuclear weapons stockpile to meet the requirements of post-Cold War missions. He conceived and initiated the Stockpile Weapon Options for Robust Deterrence (SWORD) program to identify weapon and supporting system options that could improve the assurance of nuclear weapons employment in limited, regional scenarios. Rob recognized the importance of reducing the possibility of unintended and undesirable mission outcomes that might preclude the use of the nuclear stockpile in some important applications. In collaboration with exploratory weapons systems engineers at Sandia, he devised systems concepts for improved monitoring, control, and assurance of warhead functions during delivery.

Larry Andrews


LARRY ANDREWS

W76-1 system requirements dictated the need for very small, robust connectors for the arming, fuzing, and firing system (AF&F). Larry Andrew's (1733) research of commercially available connectors and applicable performance experience indicated that these commercial-off-the-shelf (COTS) parts would introduce a high level of risk with an obvious negative impact on system reliability. Larry proposed the design and development of three new families of microminiature connectors to eliminate the performance shortcomings of the COTS parts originally considered for use. He coordinated the design effort with a HW/FM&T colleague to quickly take advantage of available drafting resources and Larry leveraged the subsequent development purchase orders with similar requirements for the W80-2, 3 LEP to save development costs on both programs. The PC board mount version of the new connectors was creatively designed as drop-in replacements for the COTS parts under consideration, thus saving valuable personnel resources and the expense that would have been otherwise required for redesign of the next-assembly subsystem. This successful design for interchangeability also provides a backup option to protect future flight schedules.

Larry Azevedo


LARRY AZEVEDO

The Primary Standards Laboratory is responsible for periodically assessing the status of the overall Standards and Calibration Program at each NNSA contractor. Larry Azevedo, Manager of Dept. 2541, significantly improved this process over the past year in three ways. The first improvement was developing and implementing an effective process to determine if appropriate standards and instrumentation are being used to support research/development programs and production activities across the complex. The second was the implementation of improvements in data and uncertainty analysis for the measurement of test artifacts across the NNSA Standards and Calibration Program. This so-called proficiency testing program ensures the accuracy of measurements supporting weapons programs. The third improvement involved implementation of a detailed quality checklist based on national standards that covers all of the technical and management requirements specified in the development and production manual.

Mike Bell


MIKE BELL

Mike Bell's (8235) role in advanced technology development for joint test assembly (JTA) systems at Sandia has been pivotal in increasing the overall quality and functionality of the JTA systems that Sandia develops. In particular, he was the original developer of the Distributed Telemetry Module (DTM) that allowed Sandia to develop JTAs that are smaller, provide higher fidelity, and are more easily reconfigurable. This technology is used in virtually all new JTA systems now in development. This technology also serves as the basis for a future, fully distributed telemetry system that promises to provide significant cost savings as well as shorten the development cycle of new JTAs. Mike led efforts in other JTA-related technology development such as wide-band transmission, data error-correction, and advanced FPGA design that have greatly improved the functionality and fidelity of the data collected by JTAs.

Jeffrey Everett


JEFFREY EVERETT

As chairman of the Recapture/Recovery Study Group — a diverse group of people from 20 organizations — Jeffrey Everett, Manager of Dept. 12334, reported to Gen. Brent Scrowcroft, chairman of the End-to-End Review. The study group's focus was to examine all recapture or recovery aspects of Nuclear Command and Control System policy, equipment (including nuclear weapons), facilities, personnel, procedures, and communications. Jeffrey proposed and implemented a schedule of site visits including the continental US and outside the continental US nuclear capable sites and their attendant headquarters. Nuclear weapons laboratories, production, and transportation sites were also visited. His group also conducted fact-finding and analysis meetings with all stakeholders in the Nuclear Command and Control System (NCCS), including DOE, Department of Defense, FBI, Department of State, and NCCS Support Staff. He led his group in drafting, producing, and reviewing group charters, terms of reference, key questions for site visits, interim findings, final briefings, and a final report. The study was accomplished on a high-intensity and success-oriented nine-month schedule. Jeffrey's approach for combined meetings and travel for his study group and the Physical and Personnel Security Study Group successfully promoted synthesis and coordination of the many common topics and concerns to both study groups and resulted in successful and timely completion of both group's goals.

George Novotny


GEORGE NOVOTNY

George Novotny, Manager Dept. 2001, has led Sandia's activities to perform the Annual Stockpile Assessment and Certification, which each year enables Sandia's President and Laboratory Director Paul Robinson to affirm to the Secretaries of Defense and Energy that the nation's nuclear stockpile is safe and reliable. He has coordinated with the Lawrence Livermore and Los Alamos national laboratories to accomplish their certifications, and he has worked with NNSA headquarters. He has continuously improved the process to incorporate lessons learned from each annual cycle and to implement national guidance. In addition, he has functioned as the technical assistant to Sandia's weapon systems vice president and chief engineer, a role that has allowed him to identify critical technical issues related to the nuclear stockpile. He has also assisted in defining and monitoring activities to resolve these critical issues.

Karen Scott


KAREN SCOTT

Karen Scott, Manager of Dept. 8524, was given the award for her work as program manager of the Laboratory Critical Skills Development Program, which creates a pipeline of critically skilled potential employees to meet the needs of the Stockpile Stewardship Program and national security. Sandia has created nine institutes in New Mexico with 300 students and seven institutes in California with more than 165 students in areas such as cyber defense, microsystems, embedded reasoning, pulsed power, materials science, engineering sciences, mechanical and electrical engineering, mathematics, and microtechnology. These institutes include an "internship experience" designed to 1) guide students into advanced studies and research in areas critical to the defense programs mission, 2) position Sandia as a highly desirable employer, and 3) make real-time contributions to defense programs/weapons deliverables. Interns work on projects aligned with their field of study under the guidance of a technical mentor. The internship experience is supplemented with technical seminars, tours, workshops, and the opportunity to participate in a student symposium to showcase their work to Sandia's technical staff and managers. It is complemented by housing assistance, on-site opportunities to network, an innovative web site, and myriad social activities.

(Continued on next page)

Individual winners

(Continued from preceding page)

Neil (Rob) Sorensen


ROB SORENSEN

Throughout his entire 20-plus-year-career, Rob Sorensen (1832) has consistently provided Sandia's nuclear-weapon design and surveillance engineers with responsive, high-quality materials-engineering support. His participation directly contributes to strong stockpile stewardship with related positive impacts on production costs, surety, safety, and reliability. Because of his effectiveness and reputation, he is often asked to work on a wide variety of materials-related tasks and projects that typically center on metal corrosion. During the past year he was engaged in a number of significant finding investigations (SFI), production SFI-like, and surveillance investigations that involved several important areas.

Steve Thornberg


STEVE THORNBERG

In 2002 Steve Thornberg's (1812) contribution to the weapons program was broad in its impact and significant in its results. Steve's expertise in the gas analysis of small volumes made him invaluable to many weapon programs in 2002. His accomplishments were many, affecting the B61 radar, W80 LEP, W78 FSA (Enhanced Surveillance Campaign Project), PT3678 Tester, W76-1, and gas sampling at Pantex (Phoenix and Viper). As one example, anomalies observed during some B61 radar tests were found to be related to the vacuum tube technology in some B61s. To determine the causes of these anomalies, Steve developed methodologies and techniques for testing vacuum tubes and materials in vacuum tubes (e.g., getters), which required extensive research on vacuum tube operation and manufacture (the most useful references were 1940s vintage). As a result, Steve identified several causes of the vacuum tubes' performance, giving planners the data they needed to determine the path forward.

Henry (Hank) Witek


HANK WITEK

Hank Witek, Level II Manager 2910, has championed significant improvements in the classified network since 1996 and has developed an electronic need-to-know (NTK) access methodology that works not only within Sandia but also within the other Nuclear Weapon Plants and Laboratories. This NTK methodology allows those working in the weapon design community to easily share classified information with colleagues who have a legitimate need to access the data. The enhancements he championed have made it easier to create and monitor access authorization to databases, files, models and drawings. With a minimum amount of financial support, he established partnerships with infrastructure developers in 9000 to build the foundation that would support this vision. His leadership has allowed Sandia in the classified network to move toward an enterprise level of operations, and this state has become a model for other Nuclear Weapon Complex partners.

Team winners

Editor's note: Following are the team winners.

Advance Hi-G Project Team

The Advance Hi-G Project Team developed a new test methodology to generate high acceleration shock pulses to be used in the design of an advanced penetrator weapon system. A test technique, using the Sandia sled track facility and incorporating an innovative foam/water decelerator design, was developed under an ambitious multiyear schedule delivering a high impact velocity test methodology by February 2002. The project team then delivered two major milestone events: characterization test of the B83 bomb electrical system in April 2002, followed by a characterization of the LLNL B83 nuclear system design in December 2002.

Team Leader: Scott Faas (8221)

Team members: Neil Davie (9134), Jeffery Cherry (9134), Edward Romero (9134), James Dykes (9134), Robert Shields (9134), Leroy Perea (9134), Steven Buck (8221), Christian Scholz (8221), David Faucett (2665), Felipe Reyes (2665), Kurt Metzinger (9126), Brian Joseph (2112), Danny Frew (15414), and Marvin Perdue (9134).

Advanced Radiographic Technologies

The Advanced Radiographic Technologies team developed the Cygnus Pulsed Power-driven Flash x-ray Radiographic Source for Sub-critical Experiments. This achievement required an integrated national team working together to define, develop, and implement a state-of-the-art pulsed power-driven high-intensity electron beam system providing a unique and essential flash radiographic x-ray source required for nuclear weapon certification subcritical experiments at the Nevada Test Site. No such system had ever before been considered, as extrapolation beyond demonstrated technology was required in the accelerator, in the pulsed power flow, and in the high-intensity electron beam load. The system successfully met and exceeded severe space, performance, schedule, and cost constraints and is now ready for deployment at the Nevada Test Site in FY03.

Team Leader: John Maenchen, Manager (1645)

Sandia team members: Kelly Hahn (1645), Joseph Gustwiller (16341), Peter Menge (no longer at Sandia), Isidro Molina (1645), Salvador Portillo (1645), Dean Rovang (1645), Beverly Rudys (1645), Steve Cordova (1645), Daniel Nelson (1634), Matt Sceiford (1637), Deanna Jaramillo (1637), Eugene Ormand (1634)

External team members: David Johnson, Robert Altes, Vernon Bailey, Victor Carboni, Patrick Corcoran, Hart Nishimoto, Ian Smith, Douglas Weidenheimer (all Titan Pulse Sciences Division), Gerald Cooperstien, Robert Commisso, Joseph Schumer (all Naval Research Laboratory), Darryl Droemer, Dennis Barker, Eugene Hunt, Thomas Helvin, David Henderson, Frank Wilkins, Raymond Gignac (all Bechtel-Nevada), Randolph Carlson, Robert Fulton, Brian Emkiet, Jake Chavez, William Gibson, Albert Lopez, Richard O'Rear, Paul Ortega, John Smith, Evan Rose, Drew Martinson (all LANL), David Van de Valde (EG&G), Dale Welch, Bryan Oliver, David Rose (all Mission Research Corporation), Steve Swanekamp, Frank Young (all Titan Jaycor Division)

B61-4 TYPE 3E Trainer Team

The B61-4 TYPE 3E Trainer Team, made up of Sandians and associates from Honeywell/FM&T, designed and built a new B61 trainer that would provide realistic training for their loading and handling crews, PAL crews, and pilots. The First Production Unit (FPU) occurred 11/01 and production has continued at the rate of three per month. The final three units were shipped from Honeywell/FM&T in March. The team demonstrated sustained production — without any significant problems in design, production, or other anomalies — for 16 months. In addition to getting the product out on time, overall cost to the DoD was maintained without a significant increase in budget. Finally, and most important, the product must meet the needs of the customer. In this area, the team excelled. Although the Air Force was able to see demonstrations of the trainer prior to FPU, the real proof came when the trainers were shipped to the field to be used as the Air Force had envisioned. Since the fielding of the first units, Sandia has received nothing but praise from the Air Force regarding the trainer and how well it is meeting their needs.

Team leader: Elizabeth Connors (2111)

Sandia team members: Walton Errickson (2112), David Clements (2111), James Harrison (2113), Douglas Hodge (2991), Michael Taylor (2111), Dale Brandt (2331), Clifford Sharp (2331), Kenneth Kimball (2125), Thomas Denman (2113), Gregory Wickstrom (2116), Samuel Sevier (2111), Grant Bloom (2131), Douglas Clark (2115), Steven Giles (2115), Brent Meyer (1735), Lorraine Curtis (1734), William Nance (2613), Lee Rieger (12326), Phil Hoover (2111), Marcey Abate (2102), James Dalton (2102), Mary Quintana (2102), Perry Molley (2331), Ray Thomas (2341), Ricardo Garcia (2331), Christine Rondelli (9134), R. Shawn Mooney (2331), Daniel McCarthy (2951), James Mangum (2111), Janet Bauerle (2116), Gordon Dodrill (2662), Ronald McClintock (1735), Guy Chun (1735), Russell Miller (1735), Russell Mikawa (1737), Dexter Boone (14011), Denise Maestas (14003), Richard Kreutzfeld (2613), Rudolph Lewis (1733), William Cain (1733), Larry Stevenson (2912), Gary McAllister (2912), Charles Christensen (2913), Raymond Macallister (2913), Jr., Malcolm Stringer (2913), Silviano Candelaria (2912), Charlotte Johnson (2912), Benny Woosley (2912), Michael Mundt (12326), Michael Blackledge (12316), Maria Walsh (12326), Gary Reif (12326), Raymond Sanchez (12336), Thomas Evans (12326), Jay Templin (12326), Guy Dahms (12326), Perry Cowen (12326), Dwayne Knirk (12316), Roger Plowman (12335), Laurence Brown (12125), Terry Bisbee (2115), L. Thomas James (5833), Cheryl Post (2111), Luis Paz (2113)

External team members: Patricia Berglund (NNSA/AL), Rosemary Gergen (NNSA/AL), Tom Davis (Honeywell/FM&T), Warren Burgett (Honeywell/FM&T), Belinda Thompson (Honeywell/FM&T), Roggy Harnden, John Woolery (Honeywell/FM&T), Ralph Warren, Marc Taylor (both KCP)

Calore and Presto Weapon Safety Codes Development and Demonstration Team

Sandia's Calore and Presto Weapon Safety Codes Development and Demonstration Team developed, debugged, demonstrated, and delivered the new state-of-the-art Calore and Presto computer codes for enhancing weapon safety. To demonstrate their capabilities, the team used them to perform the highest fidelity calculations ever performed of the accidental drop of the W80 mod 0/1 and the thermal behavior of the W80 mod 0/1 in a fuel fire. The codes are now in production use on the W80 Mod 3 and W76 SLEPs. The thermal analysis was the highest fidelity weapon in a fire simulation ever performed. It investigated the behavior of the W80 in a pool fire. One simulation analyzed the weak link/strong link thermal race and another analyzed the formation of a hot spot on the explosive surface. The calculations used over a million elements to accurately represent the geometry of the W80. It modeled the melting of the weapon cover, melting and recession of foam, radiation transport, and thermal conduction, using hundreds of thousands of CPU hours on Lawrence Livermore's ASCI White supercomputer for the analysis. This effort uncovered and corrected several bugs resulting in a reliable code that is now analyzing the W80 Mod 3 and W76.

Team leader: Steven Kempka (09113)

Sandia team members: Bruce Bainbridge (9116), Barry Boughton (9116), Steven Bova (9141), Kevin Brown (9231), Kevin Copps (9143), Henry Duong (9127), Harold Edwards (9143), Micheal Glass (9141), Robert Gross (12333), Arne Gullerud (9142), Kenneth Gwinn (9126), Eugene Hertel, Jr. (9116), Roy Hogan, Jr. (9116), Joseph Jung (9127), James Koteras (9142), Randall Lober (9141), Rodney May (9126), James Stewart 09143), J. Michael McGlaun (9140), Harold Morgan (9120), Arthur Ratzel (9110)

Computer Code Evaluation Group

The Technical Evaluation Panel (TEP) is a team of senior weapons personnel chartered to provide advice to the DOE Office of Security Policy on classification policy. Recognizing the complexity of classification issues related to computer codes, the TEP established a Computer Code Evaluation Group (CCEG) to provide advice in this area. This team includes experts in codes, nuclear weapons design, proliferation issues, and classification policy from Lawrence Livermore, Los Alamos, and Sandia national laboratories. Two years ago the CCEG was tasked to review classification policy related to simulation codes that have legitimate unclassified applications but which have some level of utility for simulating nuclear weapon performance. Their intensive effort focused on identification of classes of code capability to be protected, and recommendations for actions to develop new protection levels. In April 2002, their recommendations were endorsed by the TEP. The CCEG did exceptional work in evaluating the codes and their relevance to proliferation. The depth of understanding they brought to this problem and the clarity of their analysis and recommendations were outstanding, and worthy of an award for "notable performance, dedication, or contribution."

Team Leader: Randy Christensen (LLNL)

Team members: David Brown (LLNL), Jay Brown (LANL), Bruce Green (12225), Richard Krajcik (LANL), Douglas Post (LANL), William Quirk (LLNL), Robert Thomas (9904)

Energetic Components Product Realization Team

During calendar year 2002, Mike Kopczewski (2552)

(Continued on next page)

Team winners

(Continued from preceding page)

and his Product Realization Team (PRT) delivered several energetic components in support of several weapon systems. In particular, the team delivered energetic components for the B61, W78, B83, W76-1, and W80 LEPs, and the W88 weapon systems. This PRT "has supported the Concurrent Design and Manufacturing (CDM) program in meeting their goal of 100 percent to the Master Directive Schedule at 100 percent first time acceptance to NNSA for the past two years," as noted by CDM program management [John Sayre (14010), Cesar Lombana (14011), and Dexter Boone (14011]. Over the past year, the PRT designed and put into production the MC3002A Gas Generator that eliminated the MC3002 as a limited life component, resulting in a cost and resource savings to the complex. During 2002, the PRT also delivered several energetic components, including the MC3002A Gas Generator (B61), 280585 Spin Rocket initiator (B61), MC3753A Actuators (B83), MC4079A JTA Igniters (B16 and B83), and MC4668 Igniter (B61). During the last quarter of 2002, Mike and his team also laid the groundwork for production of several S-actuators designed by LANL, five of which are now headed toward production in FY03 and beyond, a new battery igniter, the MC4729 (W79-1), and a new Spin Rocket Motor (B61).

Team leader: Mike Kopczewski (2552)

Sandia team members: William Shelton (2553), Sally Kalemba (12336)

External team members: Elton Tibbets (Perkin Elmer), Rita Kerrigan (Pacific Scientific)

Hot Pole Cracking Team

Hot pole cracking of current stacks was a persistent and elusive problem in the neutron generator production facility that significant resources were programmed to investigate and resolve. The Hot Pole Cracking Team observed an unusual electrically field-enhanced deformation near the phase transformation. This unusual behavior contributed to the major production loss in the past few years. The team applied its knowledge gained from experimental observation that led to an immediate boost in production yield. The technical capabilities developed in this project, including a finite element stress analysis tool and a lifetime failure probability analysis, will provide high-confidence predictive simulations and calculations to support component design and production risk assessment. The team efficiently accomplished the project's work in one year.

Team lead: Pin Yang (14192)

Sandia team members: George Burns (14192), Jill Glass (1843), Michael Hutchinson (14192), Chad Watson (1843), Timothy Scofield (2561), Steven Burchett (9126), Mark Stavig (14172), Mark Rodriguez (1822), John Gieske (9122), Roger Moore (14192)

Implementation of Active Braze in MC4300

In a cooperative technical effort among the subject matter experts within the materials, design, modeling, and production organizations, active brazing was implemented into the new, small neutron tube (MC4300). This might be the first time this technology has been used within a nuclear weapons component. The Implementation of Active Braze in MC4300 Team had completed the initial development and prototyping. Final development is nearing completion, and process prove-in (PPI) will begin November 2003. As a consequence of this technology insertion into the design and fabrication of the MC4300 neutron tube, the number of processing steps has been reduced by 10 percent, from 125 to 113 steps, with a concommitant reduction in fabrication time of 12 percent. Reductions in cycle time of greater than 15 percent were also achieved. It is estimated that the total cost of each neutron tube will be reduced by about $5,000 per tube for life of program.

Team leader: Keith Meredith (14405)

Sandia team members: John Brainard (2564), Steven Burchett (9126), Carla Busick (2564), Evan Dudley (14402), Keith Meredith (14405), Gregory Neugebauer (2564), Matthew Senkow (14405), John Stephens, Jr. (1833), Charles Walker (14171)

Instrumentation Development Flight 3 and Real-Time Data Experiment

The Instrumentation Development Flight 3 and Real-Time Data Experiment Team won an award for introducing a new paradigm for weapons testing that minimizes dependence on restrictive and costly test ranges. Using space-based instead of ground-based assets for trajectory measurement and data collection, this new paradigm enables testing worldwide with minimal ground-based infrastructure. Traditional weapon field-testing approaches use highly instrumented test ranges for trajectory measurement and data collection. This test range paradigm requires the deployment of costly infrastructure along the weapon flight path. Testing is then restricted to the test range because data collection outside of the test range is not available. These two restrictions severely limit the amount of testing that can be performed as well as limiting test conditions that can be explored to conditions available within the test range. The IDF-3 and Real-Time data experiment introduced a new paradigm that uses space-based assets (satellites) for trajectory measurement and data collection. Though this experiment used ground assets for data collection, data was transmitted in real-time back to the VDC in Sandia/CA over ground- and space-based communication channels. This experiment is a step towards reducing the dependence on test ranges in the future.

Team leader: Christian Scholz (8221)

Sandia team members: Bruce Brunett (8233), Hoi Sze Lau (8231), Michael De Vay (8222), Elizabeth Wichman (8222), Yuki Ohashi (8727), Curtis Cofield (8231), Daniel Fonte, Jr. (8222), Jeffrey Jortner (8963), Gary Kirchner (8232), Maulik Shah (8222)

LIGA Near-Term Product Realization Team

The LIGA Near-Term Product Realization Team (PRT) demonstrated creativity, dedication, and technical insight to pave the way for the future use of LIGA microcomponents in surety applications and other weapon subsystems. With LIGA microparts now being evaluated for weapon applications, the near-term PRT has tackled many of the issues involved with the introduction of this new microfabrication technology, such as the difficult tasks of material characterization and dimensional metrology on the micron scale. The work of the team to ensure that the LIGA-fabricated microparts are of the highest quality will enable component designers to realize the performance advantages of microsystems due to their smaller size, greater precision, more complex geometries, and lower cost with lithographic batch processing. Specific examples of the team's work include defining new material characterization methods to handle the smaller size of LIGA microparts, setting up novel dimensional metrology tests for LIGA parts before and after performance testing, gathering performance data to evaluate LIGA protypes as well as validating micromechanical models, and developing qualified infrastructure at various facilities within the DOE complex to ensure the capability to produce war reserve (WR) quality LIGA components.

Team leader: Charles Vanecek (2618)

Sandia team members: Floyd Gentry (12336), Dawn Skala (8729), James Kelly (8729), Steven Goods (8725), Thomas Buchheit (1851), Todd Christenson (1743), Somuri Prasad (1851), Lysle Serna (1832)

External team members: Rob Steinhoff, Bob Dearth, Madhuri Widmer, Lawrence Zawicki, Ed Wenski, Sherri Huffman (all Honeywell FM&T)

Model-Based Product Acceptance Team

The Model-Based Product Acceptance Team was awarded a 2002 NNSA Weapons Award for Excellence for producing the first-ever, model-based, mark-quality weapon products accepted by NNSA WQD. The first model-based (MB) mark-quality weapon products were accepted by the NNSA Weapons Quality Division on Dec. 18, 2002, in the Manufacturing Enterprise of Sandia's Manufacturing Science & Technology Center and subsequently sent to Kansas City stores for use in B61 Trainer Assemblies. This significant milestone has broken the barrier of creating a 3-D electronic design definition that contains all the information necessary to fabricate, measure, submit, and accept mark-quality weapon product. The processes and capabilities developed by the team are required for the quality-controlled use of the 3-D electronic design definitions used in supporting weapon production and acceptance. This ADAPT sponsored project partnered Sandia, NNSA, and KCP to develop the baseline capability that will be expanded as the complex works together to establish common practices required for future model-based capabilities in support of LEP work.

Team leader: Stephen Baca (14111)

Sandia team members: Douglas Abrams (141862), Ronnie Albers (141861), Maureen Baca (14010), Edwin Bryce (14186), Patricia Barthelmes (14401), Jo D. Bridge (141813), Peter Chauvet (12326) , Perry Cowen (12326), Gary Gallegos (141862), Monico Lucero (141861), William Nance (2613), James Paustian (141862), Jane Poppenger (14186), Ray Sanchez (12336), Terrance Smith (14111), Lee Rieger (12326), Daniel Pellegrino (31323), Larry Varoz (12316), Jamie Welles (14111)

External team members: Gary Eckert (DOE/AL), Louis Perez. (DOE/AL), Rick (DOE/AL), Jim Reilly, (KCP/ME3), Don Schilling (KCP/458), Don Rathburn (KCP/D/A15), Lisa Vernon (KCP/A14)

Nuclear Weapons Complex Technical Business Practices System Team

The Nuclear Weapons Complex (NWC) Technical Business Practices (TBPs) System Team is receiving this award for exemplary leadership, teamwork, and expertise in the development and maintenance of the Nuclear Weapons Complex Technical Business Practices. The team is recognized within the NNSA as the team responsible for establishing and maintaining a system by which technical requirements, policies, and procedures are followed throughout the NWC. All NWC sites are required to participate in this system. The NWC TBP System Team provides the leadership and technical expertise required to make this system work in the development, design, production, maintenance, surveillance, refurbishment, and dismantlement of nuclear weapons. The application of the TBPs ensures that the highest quality nuclear weapon product can be delivered to the DoD.

Team leader: Mark Dickinson (9821)

Team members: Ken Buck (82253), Penny Jones (9821), Charles Lloyd (9821), Mary Ann Monia-Archebeque (9821). Wilbur Bergquis (LANL), Rodger Cobb (LLNL), April Dunbar (PX), Gary Echert (NNSA/NA-12), Mike Eckart (LANL), Ray Jordon (KCP), Melissa Lewis (LANL), Geoff Netzley (SRS), John Norwalk (14403), Glenda Ross (8224), Larry Snow (Y-12), Pam Maynard (KP)

SIMBA Software Development Team

The SIMBA (Software Development Team)Software Development Team is receiving this award for an innovative and customer-focused approach to developing SIMBA (Software Manager and Builder for Analysts). SIMBA facilitates the building and management of complicated finite element models of weapon systems. Although only two years old and still under active development, SIMBA has been deployed for use in unclassified and classified environments at Sandia. Analysts in 8700 are using it to construct all of the abnormal structural environment simulations for the W80-3 being run on ASCI White at LLNL. It has also recently been used with models of the B83 and W76. Innovative SIMBA features including multiple model and simulation management, complete input file generation, model archiving and sharing, rapid mesh visualization and joining, and model quality assurance checks are saving analysts large amounts of problem setup time and reducing simulation errors due to incorrect setup.

Sandia team members: Ernest Friedman-Hill, Robert Mariano, Robert Whiteside, Andrew Rothfuss (all 8964)

Switchtube Design Group

In the last year the Switchtube Design Group has brought their production facility up to WR standards, developed/qualified a tester, and designed/qualified two components for the W76 program. The group designs, tests, and produces switchtubes. In 1996, Sandia designed and produced two WR switchtubes with a budget of $6 million and 17 people. Today the design group, along with PerkinElmer support, produces and tests 14 devices with a $3 million budget. During the time after the department was dissolved and WR work was restarted, the group used the time to simplify switch-tube design and fabrication processes.

Team leader: Gordon Boettcher (2616)

Sandia team members: Cathy Richey (02616), Stewart Halbig (2616), Frank Trowbridge (2616), Ray Peter (14186)

External team members: Tony Cusumano, Don Dupuis, Donna Jones, John Picariello, Randy Correa (all PerkinElmer)

W62 DCA Test Development Team

The W62 DCA Test Development Team demonstrated outstanding determination to meet schedule, customer requirements, and a commitment to quality. It delivered a W62 firing system test capability at the Sandia ECF to QC-1 standards. This test capability allows tests of W62 aged stockpile samples to be tested and scored for reliability. This data will be critical to understanding aging effects on this weapon system. The team applied rigor, formality, and process controls consistent with Sandia's quality requirements as defined in QC-1. Teamwork, evidenced by the close working relationship achieved across organizational lines within Sandia, as well as with Lawrence Livermore National Laboratory. Compounding the technical challenges and the rigorous quality approach was a very demanding schedule. Despite these hurdles, the project was hugely successful. The team executed all of the required tests, recorded all of the required data, and met 100 percent of its requirements on time.

Team leader: William Curtis III (2612)

Sandia team members: Ronald Sauls (08241), John Lanoue (2554), David Paul (2554), Mark Nissen (9134), Betty Cavender (2996), Rudy Jaramillo (2996), Mark Cannell (2612), Joseph Bonahoom (2612), Gordon Groves (2616), Lee Rieger (12326), Kenneth Miles (03127), John Fuller (2345), Samuel Johnson (8231)

External team members: Glen James, Doug Hargrove, Vince Farfan (all LLNL), Justin Foltz, George Brown (both Allied Signal/FM&

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Paul Robinson's 'Comments on the Proposed Rulemaking Regarding the Use of Polygraphs'

C. Paul Robinson
June 12, 2003

Background

I am pleased to provide comments with respect to the proposed rulemaking action. The entire history of the Department of Energy's use of polygraphs, from the initial legislation, through the recently released National Research Council (of the National Academies) study, has been a complicated and confusing episode. The present task has been made more difficult because of our belief that one cannot adequately understand and develop a "best practice" for evaluating the use of polygraphs without having access to all of the classified information relating to the use of polygraphs as a counterintelligence tool. Much of the most relevant information has been classified at very high security levels. We find it a most regretful situation, in hindsight, that **the National Research Council (NRC) study was undertaken without having access to this classified subject matter.** Nonetheless, our set of comments is submitted in an unclassified document.

In response to detailed legislation, the Department of Energy now includes the use of polygraph examinations as a condition for continuing access to highly classified programs, or as a pre-condition for gaining initial access to certain compartmented or special access programs. The Secretary of Energy has wisely postponed a final decision on the issue of how the Department's program should be changed in light of the findings of the NRC study, *The Polygraph and Lie Detection*, released on October 8, 2002. For the interim, the Secretary of Energy has concluded that it is appropriate "at the present time to issue a proposed rulemaking that retains the current system of polygraph use within the DOE."

Editor's note

This is Sandia President and Laboratories Director C. Paul Robinson's invited response to DOE's proposed rulemaking about polygraphs. Paul sent it to DOE Secretary Spencer Abraham June 12. DOE announced the proposed rulemaking April 14 (*Lab News*, May 2) as part of its response to the National Academy of Sciences report on use of polygraphs at the DOE national laboratories (*Lab News*, Oct. 12, 2002). DOE invited public comment, and Abraham invited Paul's comments, by June 13. In sharing this letter with the *Lab News* for publication, Paul indicated that although he solicited input from a lot of employees, in the end, because of time constraints, this stands as his personal input to the rulemaking process and shouldn't be considered as a Labs-consensus document. Emphases in the text are Paul's. — *Editor*

I agree with the Department that recent preoccupation within the US government over the war in Iraq and the continuing war on terrorism has not allowed sufficient time nor venues for discussion of the important matter of the use of polygraphs as a security screening tool. I would argue further that never, to date, has there been a sufficiently thoughtful or detailed examination of the potential benefits, as contrasted with the concomitant problems, associated with the use of polygraphs. There is a longer history of the use of polygraphs by other government agencies, and the lessons learned there have not found their way into the Department of Energy's plans or procedures. Regrettably, since the legislation calling for a study by the National Academies only singled out the Department of Energy to examine its procedures in light of the study findings, other agencies of the government which currently rely on polygraphs for screening are loath to even discuss the issues raised, claiming "None of this applies to us!"

Lastly, the fact that the National Academies-sponsored study was not performed as an "all-source" study, but only used the unclassified literature, appears to have doomed its conclusions from the start. Please note the statement on page 3 of the report's summary regarding **Countermeasures**: "It is possible that classified information exists on these topics; however, this committee was not provided access to such information and cannot verify its existence or relevance." We observe that those US agencies placing strong reliance on polygraphs for security screening dismiss the essential findings of the NRC study, based on their own statements of "classified anecdotes" that would contradict the findings. That such a situation of conflicting views exists without attempts to seek resolution is most regrettable in our government. **In hindsight, it should have been imperative that at least a subset of the NRC study panel be cleared for all-source information on polygraphs**. The two most important topics requiring insight are admissions of espionage during polygraph exams and any record of spies having been able to defeat the polygraph. Thus, we conclude that classified discussions are a necessity before reaching final conclusions with respect to the proposed rulemaking. We would be pleased to participate in such discussions with

(Continued on next page)

Team winners

(Continued from preceding page)

W76-1/MK4A JT4A-2B Normal Environment and Model Validation Test Team

The W76-1/MK4A JT4A-2B Normal Environment and Model Validation Test Team is receiving its award for exemplary effort in the successful completion of the W76-1/MK4A JT4A-2B test series under extremely tight schedule constraints. The JT4A-2B Normal Environments Test was the first high-fidelity, system-level test supporting qualification of the MK4A reentry body (RB) design under the W76-1/MK4A Life Extension Project. Vibration and shock environments specified in the W76-1 Stockpile-to-Target Sequence (STS) document were applied and controlled at the aft end of the JT4A-2B body, and response measurements were made at critical locations within the test body. The team met the test objectives, which included collecting data for developing component environment specifications, defining follow-on dynamic response test environments, confirming pre-flight ground qualification for the DASO-18 flight test, validating structural dynamics models using the ASCI code SALINAS, and evaluating differences in the dynamic response of the W76-1 system relative to the W76-0 system.

Team leader: Scott Klenke (9125)

Sandia team members: Luis Abeyta (9134), Jimmy Aldaz (2132), Thomas J. Baca (9125), Vesta Bateman (9126), Brad Boswell (2132), Frederick Brown (9126), Reyes Chavez (2132), David Clauss (9127), Ronald Coleman (9122), Neil Davie (9134), Larry Dorrell (9125), David Fordham (9813), Anthony Gomez (9125), Danny Gregory (9122), Randy Harrison (2132), Dennis Helmich (2132), Thomas Hendrickson (2132), Ronald N. Hopkins (9125), David Kelton (9125), Paul Larkin (9127), Jose Montoya (2132), Michael Nusser (9122), Christian O'Gorman (9125), Charles Olguin (9122), Harold Radloff (2132), Nathaniel Roberts (9125), Dan Scott (2132), Dale Shamblin (9134), Todd W. Simmermacher (9124), D. Gregory Tipton (9125)

External team member: James E. Freymiller (9125 Contractor), John Laing (9126 Contractor)

Weapons Energetic Packaging Committee

The WEPAC —Weapons Energetic Packaging Committee — is a DOE complex-wide team that manages engineering drawings and processes to ensure that packaging materials for energetic weapon components are designed, managed, tracked, and provided throughout the weapons complex and the national laboratories. A WEPAC teaming engineering effort was initiated in 2002 to review all existing packaging documentation of packaging materials which support explosive weapon components in current production, in the stockpile, and in retired status. This detailed engineering analysis reviewed archived engineering drawings from closed facilities such as Mound and the Pinellas Plant as well as current active drawings at four different sites. Over 500 drawings were reviewed for accuracy for specification references, engineering processes, safety engineering, and to technical business practices standards.

Team leader: Cynthia Kajder (10262)

Sandia team members: Roland Kelley (10262), Donald Marchi (retired), Ronald Martinez (2553), Daniel Hughes (2996), Gordon Roubik (14408)

External team members: Ron Karpen (LANL), Steve DePaula (LANL), Mark Williams (LANL), Alan Hall (LLNL), Steven Poteet (Pantex), Linda Hassler (NNSA/WQD/NA-121.3), Rick Pierson (NNSA/WQD/NA-121.3), Anton Tran (NNSA/WQD/NA-121.3)

Team for Weaponization of Removable Resins for Encapsulants, Coatings, and Adhesives

The Team for Weaponization of Removable Resins for Encapsulants, Coatings and Adhesives is receiving the award for its contribution in bringing removable resins into practical application for weapon refurbishment at Kansas City, providing the DOE community with the capability for rework of electromechanical components. The desire for a removable encapsulant had been voiced by weapon engineers at Sandia for many decades, but no removable encapsulants with sufficient mechanical, adhesive, and curing proprerties have become a reality prior to this team's effort. The new materials allow the team to efficiently remove encapsulants without any sacrifice in the performance of the electronic or mechanical device.

Team lead: Edward Russick (1811)

Sandia team members: James Aubert (1811), Patricia Sawyer (1811), David Wheeler (1764), James McElhanon (8722)

External team members: Michael Gerding (Honeywell FM&T KCP), William Sung (Honeywell FM&T KCP), James Small (LANL), Douglas Loy (LANL), Randall Saunders (dec.)

Weapons Response Team

The Sandia Weapons Response team consistently delivered high-quality, accurate weapons response data in support of Pantex authorization basis activities. During the past year the team developed and supplied weapons response information in support of the Transportation & Staging Safety Analysis Report, W88 SS-21, B83 SS-1, W78 SS-21, Separation Test Facility Safety Analysis Report, and supported Safety Basis Review Teams for the Transportation & Staging SAR, Separation Test Facility, LINAC, Mass Properties, Vacuum Chamber, Paint Bay operations, W62 SS-21, and W78 SS-21. While tackling these scheduled activities, they also were able to support high priority OTS activities without impacting their other deliverables.

Sandia team members: Martin Fuentes, Alton Donnell, John Ludwigsen, Jeffrey Philbin, Teresa Sype, Tom Lin, Todd Jones (all 12333), James Harrison (2113)

Z Power Flow Modification/Pulse Shaping Team

The Z Power Flow Modification/Pulse Shaping Team received their award for providing pulse-shaping capability on Z enabling precision equation-of-state (EOS) experiments. Initial experiments providing current-pulse shaping for Isentropic Compression and launching of high-velocity flyer plates for EOS experiments for the stockpile stewardship program were limited by a significant power flow problem that damaged the Z high-current driver. The team identified a unique solution to this problem and then tested it and implemented it on Z. The result is an increase in flexibility by a factor of six in the creation of the current pulse shape with the elimination of all damage.

Team leader: Dillon McDaniel (1640)

Sandia team members: David Bliss (1644), Jean-Paul Davis (1646), Guy Donovan (1636), Thomas Downey (1639), Clint Hall (1647), Henry Harjes (1644), Marcus Knudson (1646), Raymond Lemke (1674), Dillon McDaniel (1640), Timothy Pointon (1642), James Potter (1636), Sonrisa Rogowski (1644), Mark Savage (1644), David Smith (1639), Kenneth Struve (1644), Mike Furnish (1647), Josh Mason (1646), Jerry Mills (1636), Stephn Ploor (1636), M. Saeed Shamis (1636), Robi Sharpe (1644)

External team members: Ellis Dawson (consultant), Raymond Collins, Devon Dalton, Raymond Doty, Mark Dudley, Mark Harris, Erik Illescas, Barbara Lewis, Jason Podsednik (all Ktech)

Polygraphs

(Continued from preceding page)

you and your staff.


PAUL ROBINSON

The scientific analyses undertaken in the NRC study are, in my view, exceptionally sound work, and **we strongly agree with the study's conclusions that the current method in which polygraphs are used as a screening tool does not pass scientific muster**. We would emphasize that imposing such a regimen on highly trained scientists, engineers, and technicians does add "insult" to the potential injury the study amply documents, where truthful, valued employees will be brought under suspicion simply as a "statistic" (i.e., a "false positive") inherent in the use of this imperfect tool.

One of my staff, experienced in the use of polygraphs by other agencies, as well as the current DOE system, summarized the conclusion most starkly in the statement "**The current polygraph screening process would appear to be likely to create more spies than it catches**." [That is—a substantial number of truthful individuals whose loyalty will be brought into question, potentially even ruining their careers, might become disgruntled enough to become disloyal to their country over their treatment in the polygraph process. This number could certainly rival, if not exceed, any numbers of "admissions" that might ever be achieved during polygraphs.]

We would also single out the strong conclusion within the NRC study that "overconfidence in polygraph screenings can create a false sense of security" by noting the many cases in which individuals were considered "beyond suspicion" because they had "passed" a polygraph exam, until later events revealed they had, in fact, been involved in espionage all along. We believe that this conclusion will not be contradicted should a study of polygraph screening be extended to include the highly classified cases.

In developing our recommendations to the Department as to what might be an acceptable "path forward" in this matter, we suggest that polygraph programs of other government agencies should be more thoroughly examined for guidance. One agency, whose initial program resembled to a great extent the current DOE practice (as was mandated to DOE by the Congress), has now modified its polygraph program considerably, based in large measure on individual lawsuits as well as class-action lawsuits.

History suggests that DOE may well be headed for a "train wreck" over its use of polygraph screenings. For example, if a scientist, engineer, or technologist should lose his or her access to classified information (with its concomitant career ramifications) based solely on the results of a polygraph examination having found him or her to be either "potentially deceptive" or "inconclusive"—but with neither "admissions" nor other collateral evidence of wrongdoing—that employee can seek legal redress in the courts. The likely result would be a ruling against the government, since the polygraph information would not be admissible within the US Federal courts.

Thus, many other agencies of the government are stepping back from sole reliance on polygraphs, but instead are making very limited use of it as a tool for identifying whether an employee might be a security risk. Subsequent employment actions against employees must result from more substantial evidence and not be the result of the polygraph alone. We believe this is the right course for the Department of Energy to pursue as well.

Our recommendations:

(1) Reconvene a portion of the National Academies (NRC) study group to review all-source classified information to assess how this information might affect (e.g., cause them to revise) certain study conclusions.

"The scientific analyses undertaken in the NRC study are, in my view, exceptionally sound work, and we strongly agree with the study's conclusions that the current method in which polygraphs are used as a screening tool does not pass scientific muster."

(2) Ensure that polygraph findings (in isolation) do not result in adverse consequences to otherwise loyal employees.

(3) Ensure that adverse polygraph examination results (either a "deceptive or inconclusive" finding, but in the absence of an "admission" or other collateral evidence of espionage activities by an employee) trigger more intense and more frequent background investigations, financial disclosures and reviews, etc.

(4) Promulgate a clearly articulated policy explaining the implications of a "fail to pass" or "indication of deception" and identify the additional measures required to validate a polygraph exam "failure."

(5) Implement a greatly revised policy on polygraph screenings—in which any and all cleared employees with access to nuclear weapons design data and drawings are subject to polygraph examination "for cause." In conjunction, establish a program of random polygraph screenings in which a minimum number of employees would be randomly chosen (annually) for the current "4-question" polygraph. (Thus, anyone summoned for a polygraph would not be told whether their selection is "for cause" or a result of random selection.) We also realize that to sustain a polygraph capability within DOE requires a certain minimum level of examinations, but our recommendation is that the size of the effort be established to deal primarily with "for cause" polygraphs rather than random screenings.

(6) Implement a parallel program in which a similar number of employees are randomly selected for more intense background and financial scrutiny each year (using the same procedures and level of investigation as described in Recommendation (3).

Discussion:

Our discussions with key officials in other agencies reveal that their earlier polygraph programs had indeed led to ruined careers, because individuals "had not done well in their polygraph exams." At first, their senior management's view was that these were unfortunate, but "necessary casualties" of attempts to protect the nation's secrets as best they could in an "imperfect world." As time went on, however, and the "casualties" mounted, strong doubts appeared as to whether such extreme restrictions on a person's access (and hence, career) should be taken on the basis of polygraphs alone—in the absence of an admission of wrongdoing or collateral evidence of such wrongdoing. Similarly, it became clear that the "human toll" extracted, because of the restrictions on people's careers (brought on by an unfavorable polygraph result independent of any other evidence of wrongdoing), was not a good investment for the agency or for the country.

The NRC's specific conclusion with respect to DOE polygraph security screening (page 8-5) cannot be ignored: "The polygraph as currently used has extremely serious limitations for use in security screening to identify security risks and to clear valued employees." The report admits that there well may be a deterrent value in eliciting admissions and confessions, particularly in naïve subjects, but stresses, "such utility is separate from polygraph validity" (cf. page 8-3). We would compare that value against the NRC's basic conclusion regarding the issue of the scientific validity in using the polygraph for "event-specific investigations" (rather than for personnel security screening) as stated on page 8-2 under **Estimate of Accuracy**: "*…we conclude that in populations of examinees … untrained in countermeasures, specific-incident polygraph tests for event-specific investigations can discriminate lying from truth telling at* rates *well above chance, though well below perfection."* (My underline added.)

We therefore believe that while there appears to be an "ocean of bath water" associated with the use of polygraph examinations, there just might be a "small baby" which should not be casually thrown out. **We would stress, however, that to date the DOE polygraph program for personnel security screening makes no use of the one area where there may be some, albeit imperfect, scientific value in the use of polygraphs —for event-specific (or specific-incident) investigations.**

Thus, we are led to recommend that the Department of Energy should change its course in applications of polygraphs. We, too, are loath to throw out its use completely, because of the paucity of other tools, but we strongly conclude that we must "take the sting out" of the failure to "pass" a polygraph. Our recommendations (2), (3), and (4) suggest major changes are in order. In the absence of either admission, confession, or other collateral evidence (outside of the polygraph determination alone) we would only invoke greater scrutiny of anyone found to be "deceptive" or "inconclusive," but **we strongly believe that, based on polygraph examination findings alone, there is an insufficient basis to limit access or take any other personnel actions.**

I have taken a "straw poll" among some of our employees and find that employees are ready and willing to undergo more extensive personal scrutiny in such a situation; indeed, all assumed that such would be the case when they first agreed to perform classified work. I found no fears that they would be investigated in much greater depth and rigor in order to clear their reputation following an "unfavorable" polygraph. At the same time, I found strong negative reaction to anyone personally having their job or career disrupted because they were a "false positive" statistic of this quite imperfect tool.

Recommendations (5) and (6) follow from obvious considerations that a self-consistent process needs to be applied if polygraphs are carried out. They would ensure that our use of such polygraph examinations "for cause" in specific-incident cases does not warn an employee suspected of espionage activities that he or she is under such suspicion and thus place them "on their guard." Rather, the individual would always conclude that they were randomly chosen. Therefore, we believe that the selection process for individuals to be polygraphed would be under the control of the Senior Security Officer at each laboratory or site, with the Senior Counter-Intelligence (CI) Officer at each lab or site able to also select employees for the "for cause" polygraphs in conjunction with CI investigations. No one else in the organization need know whether the polygraph was being undertaken on the basis of a suspicion, as part of an on-going investigation, or as one of the few random choices.

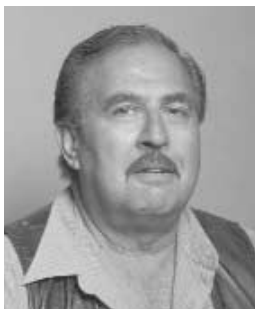
We stress that by adopting these two latter recommendations **we gain any "deterrent value" of polygraphs across the entirety of the nuclear weapons workforce**, and terminate the as-yet unresolved debate as to "which sub-groups should be included and which should be excluded from polygraphs." By adopting these recommendations as a self-consistent set, I believe they will find greater acceptance among our employees, even though many more of them would be "captured" under these policies.

It is our belief that adoption of these recommendations can make the best use of the controversial tools of polygraphy, preserve the scientific values of our institutions, and treat our employees respectfully while carrying out our ultimate responsibilities for the protection of the nation's security through the important highly-classified work of our missions.

Mileposts

New Mexico photos by Michelle Fleming
California photos by Bud Pelletier


Ronald Glaser
35 5835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35 9610


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35 5852


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MISCELLANEOUS

TIMESHARE, Hawaii, Nov. 30-Dec. 7, 2003, very nice resort, w/kitchen, sleeps 6, $600 OBO. Barreras, 246-8285.

CONSOLE COLOR TV, Sears, works fine, make offer; scalloped edging bricks, free, you haul. Carroll, 401-0988.

WEIGHT BENCH, woman's Extreme Performance, brand new, assembled, comfortable, adjustable, versatile, good product, $60 OBO. Duffy, 265-7905.

SEWING MACHINE, Sears/Kenmore, dark-wood cabinet, excellent condition, $100. Wade, 792-0096.

SLEEPER COUCH, queen-size, good condition, $150; kid's drum set, $12. Zamora, 296-8251.

PIANO, Yamaha professional model, rich tone, downsizing, piano must go, book price $3,500, asking $2,500. Linn, 271-0336.

GUITAR W/CASE, ESP LTD MH-200, 2 yrs. old, Floyd Rose bridge, numerous enhancements, perfect condition, negotiable, $450. Scussel, 821-7702, ask for Dave.

APPLE iMAC, 233 MHz, blue, looks like new, needs power supply, $195. Baca, 271-2962.

KITCHEN RANGE EXHAUST HOOD, 42-in. Vent-A-Hood, wall mount, dual blower, $350 OBO. Spitz, 294-6237.

CHINA HUTCH, solid 3/4-in. white oak, early American style, excellent condition, $800. Corbet, 856-6161.

CAMPER SHELL, for medium-size truck, $75. Owens, 292-9627.

BED FRAME, queen-size, metal, $35. Szydlowski, 332-8018, ask for Marilynn.

CAMCORDER, Sony, 8mm, CCD-TRV87, several features like nightshot, photo-mode, stereo sounds, plus much more, $275 OBO. Lovato, 294-5897.

BUNK BEDS, heavy wood, attached ladder, mattresses, $300. Haines, 263-6497.

ENTERTAINMENT CENTER, oak, $100; full exhaust for '01-'03 Suzuki GSXR, $125. Gallegos, 804-3758.

VIOLINS, 2 full-size, 1 under-size, German & Italian made, high quality, good tone, value >$600, $350 ea. Chu, 293-1222.

HAMMOCK, double-wide, very good condition, $45; Razor scooter, barely used, $20. Poulter, 291-0607.

SHORT COMPUTER RACK, dark brown, good condition, free. Laros, 890-0657.

DESK, TEMA contemporary, flyer available, 29"H x 57"W x 30"D, cherry finish, $70. Trujillo, 293-8568.

MINI-DACHSHUND, 5-mo.-old male, registered, house trained, good w/kids, cats & dogs, needs good home, $250. Martinez, 298-2814.

OZFEST TICKETS, floor, sec. BB, center, seats 17&18, $350 ea. or $600 both. Shaver, 401-4210.

CRIB, Childcraft, new, unfinished maple, w/drawer, $250; ski/snowboard rack, $45. Salazar, 243-8168.

SEWING MACHINE, antique treadle, 1885, light wood cabinet, $250 OBO. Douglas, 281-9843.

REVERSE OSMOSIS SYSTEM, w/5 filters, $100. Dietz, 286-8244.

ALFALFA HAY, covered/barn stored, 66 bales, $5.50/bale. Stephens, 292-6515.

CHILDREN'S BUNK BED, pink, bottom fits full, top fits twin, perfect condition, $75. Adragna, 293-6787.

DINING ROOM TABLE, w/4 chairs, perfect for college student, fair condition, $40. Maestas, 836-7336.

DINING ROOM TABLE, ivory color, w/4 chairs, good condition, $150; sectional couch, queen sleeper (huge), mauve, good condition, $500. Greear, 294-5339.

BEDROOM SET, full-size, maple finish, bed, $150; dresser w/mirror, $150; chest $125; or all $400. Carlisle, 792-4064.

ENTERTAINMENT CABINET, oak, 72" x 38" x 16", fits 32-in. TV, upper glass enclosed, DVD/VCR shelf, solid-door storage below, perfect, $235. Pitts, 293-5481.

OUTDOOR BENCH SWING, Kelly green canopy/cushions, white metal frame, $60; 3.5-hp electric chainsaw, $30. Lucero, 298-1524.

SOUTHWEST AIRLINE VOUCHER, expires 4/04, $325. Lewis, 798-9806.

JEEP HARD TOP, fits '97-'02, broken back glass, otherwise good shape, $495 OBO. Greene, 980-5896.

PROPANE WATER HEATER, 5 yrs. old, 50-gal., used w/softened water only, nearly new condition, $100. Heffelfinger, 379-9487.

TRIPLE DRESSER, oak, w/twin mirrors, 6-ft. long, dark stain, very good condition, $150 OBO. Barnard, 771-4620.

SOUTHWEST AIRLINE TICKET, Rapid Rewards, roundtrip, expires 4/04, $300 cash, Duvall, 453-9794, leave message.

WATERBED, twin-size, complete w/frame, headboard, base w/drawers, mattress, liner, & heater, free. Teague, 293-8736.

COMPUTER, HP Pavilion 6745c, 700 MHz Celeron, 320MB memory, 20GB HD, CD-RW, Windows ME, $299. Smiel, 865-9081.

DINING SET, elegant, formal, oval table, w/leaf, 6 chairs, large hutch, cherry finish, pad included, $400. Burroughs, 332-1798.

COLOR ENLARGER, 35mm, Durst, w/colorhead, easels, drums, timer, exposure meter, $100. Mills, 294-5219.

BENTLEY PIANO, blonde, w/music storage bench, made in UK, $3,500. Robertson, 821-6388, ask for Yvonne.

PRECISION TABLE SAW FENCE, INCRA TSII, w/router accessory package, excellent condition, paid $550 new, asking $260. Fleming, 293-9421.

STORAGE SHED, Ezee shed, 8' x 9', unopened, from Home Depot, paid $550, asking, $400. James, 294-6837.

ANTIQUE DOORS, 2, ornate oak, oval beveled glass, all hardware, $700, pair or separate. Ewen, 836-3563.

VACUUM CLEANER, Kenmore, canister-type, w/Power Mate & Power Mate, Jr., $150 OBO. Little, 883-9329.

SLIDE PROJECTOR, cast aluminum construction, 2-1/4" x 2-1/4" slides, 3 new projection bulbs, mint condition, $150. Dickenman, 994-3451.

UPRIGHT FREEZER, Kenmore, 18 cu. ft., $350 OBO. Chaves, 341-9595 or 259-0305.

KITTENS, black & white, 6 wks. old, good home, $20 ea. Urioste, 385-5512.

SEWING: Pfaff 2140, $4,000; Autodigitizer, $800; Pfaff 6270, $800; Pfaff 1471, $800; Elna Grasshopper, $250; Consew Industrial, $1,200. Esherick, 299-8393.

MATTRESS PILLOW, twin-size, Lerner New York Home, practically new, paid $40, asking $10. Carbajal, 294-8456.

MASSAGE TABLE, brand new, top of the line, lifetime guarantee, extras, originally $795, asking $500. Rogers, 489-2621.

ELECTRIC CHAIN SAW, 14-in., $35; Weedeater blower, $50; lawn mower, $90; gas grill, $40; 1300 PSI power washer, $65. Gluvna, 884-5251.

BLOOD DRIVE, Eagle Scout, Edgewood LDS Church, Saturday, July 5, 9:30 a.m. – 2:30 p.m. Reese, 281-6658.

RABBIT CAGE, mountain bike, light fixtures, utility trailer, luggage rack, luggage carrier, water & snow skis, pet carrier. Turner, 292-6819.

POOL TABLE, 4' x 8', Murrey, 1-in. slate top, great shape, $950. Duncan, 271-2718, www.swcp.com/duncan.

LAVENDER FIESTA, 6/29, 10-5, Corrales Rec Center, benefits PB&J Family Services, advanced tickets $5, gate $7, kids free. Errett, 858-1013.

EVAPORATIVE COOLER, WhisperCool, portable, 22" x 17" x 23" high, excellent condition, $95 OBO. Miller, 281-4749.

HIGH CHAIR, Cosco, adjustable height, reclines, excellent condition, hardly used, $30. Grumblatt, 294-4738.

GARAGE SALE, June 27 & 28, 8-1, 1701 Vermont, SW of Indian School/Wyoming. Keiss, 299-3312.

CONSOLE PIANO, Wurlitzer, beautiful dark wood, w/bench, $800. Drebing, 293-3335.

DINING TABLE, w/6 chairs, unfinished oak, 4' x 7', w/leaves, $350. Moser, 271-1890.

TIRES, 2 BF Goodrich All Terrain Radial TA, 31x10.5x15, great condition, about 70% tread, $70 ea. Reser, 345-7294.

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

Ad rules

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

ELECTRIC MOWER, $25; king frame, w/box spring, $40; iron daybed, w/mattress & étagère, $50; lounge chair, $15. Weston, 275-6539, ask for Erik.

MOVING BOXES, various sizes for 4-bdr.+ house, $65. Chu, 858-1135.

MATTRESS & BOX SPRING, queen-size; portable electric typewriter, best offer. Clement, 293-1416.

SOFA, great condition, $250; coffee table; TV stand; bookcases; microwave cart. Sissel, 453-6723.

REFRIGERATOR/FREEZER; golf clubs, left hand, Big Bertha warbirds, driver, & #3. Spray, 821-5877.

TRANSPORTATION

'93 CHRYSLER CONCORD, V6, PW, PL, AC, CC, ~110K miles, good condition, $3,000 OBO. Cardoza, 250-6501.

'98 CHEVY K1500 PICKUP, 4x4, 5-spd., 350 engine, limited slip differential, green, 43K miles, $14,500 OBO. Hayward, 296-0721.

'69 OLDSMOBILE DELTA 88, 4-dr. sedan, 455 engine, has been garaged, 167K miles, good condition, runs great, $2,200. Duncan, 832-4920.

'95 BMW 325IS, 2.5L, 6-cyl., 5-spd., many extras, 53K miles, great shape, $15,995. Pulos, 294-2069.

'97 MAZDA MALLINA, V6, AM/FM/CD/cassette, leather, moon roof, 61K miles, clean, $10,000 OBO. Neito, 831-6372, ask for Pete.

'99 PLYMOUTH BREEZE, Expresso model, 2.4L, AT, 42.5K miles, excellent condition, $4,995. Abeyta, 463-5529.

'98 FORD CONTOUR, 4-dr., PW, PL, CC, light blue, new tires, 1 owner, 97K miles, great condition, $4,000. Hoffman, 352-2089.

'94 JEEP GRAND CHEROKEE LAREDO, fully loaded, leather, AM/FM/CD, original owner, 118K miles, $6,000. Whittemore, 797-2335.

'02 DODGE NEON SXT, 4-dr., 5-spd., alloy wheels, AC, AM/FM/CD, spoiler, 15.7K miles, excellent condition, $10,985 OBO. Martin, 857-9832.

'97 BMW Z3, convertible, 1.9L, 5-spd., blue metallic, new black top, leather, synth. oil, 53K miles, $16,500. Webb, 858-0208.

'89 TOYOTA CELICA, 5-spd., no kids, no pets, no smoking, 101K miles, excellent condition, $2,700. Landa, 821-4374.

'71 CHEVY CHEYENNE, LWB, V8, AT, factory air, tach, ralleys, low miles, super clean, $5,500. Gutierrez, 239-7059.

'95 HONDA ACCORD, 2-dr., AT, CD, white, tan interior, new tires, 87K miles, very good condition, $6,200 OBO. Archuleta, 565-9481.

'97 FORD CROWN VICTORIA LX, 4-dr. sedan, fully loaded, leather, 1 owner, all records, $8,500. Gregory, 296-4086.

'94 FORD RANGER, XL Supercab, 2WD, 4-cyl., 5-spd., 87K miles, good condition, $4,200 OBO. McBride, 298-2273.

'95 MITSUBISHI MONTERO, silver, AM/FM/CD/cassette, cruise control, luggage rack, seats 7, 96K miles, $4,500 firm. Mehler, 823-9020.

'97 TOYOTA 4-RUNNER SR5, 4WD, AC, PS, PW, PL, CC, AM/FM/CD/cassette, sunroof, running board, excellent condition, $13,000. Grumblatt, 294-4738 or 440-1780.

'95 HONDA CIVIC EX, 2-dr., 5-spd., Vtec, AC, PL, PW, moonroof, 94K miles, $5,500 OBO. Estes, 856-1549.

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

'94 JEEP WRANGLER, 6-cyl., 5-spd., soft top w/bikini, AM/FM, new tires, 74K miles, no problems, clean, $7,800. Edgar, 922-1827.

'97 FORD EXPLORER, V6, 4WD/AWD, security, AC, alloy wheels, 28,691 miles, excellent condition, $9,000. Dobias, 856-7841.

'00 FORD RANGER, 4x4, 20,500 original miles, excellent condition, $15,000 OBO. Clayton, 877-7816 or 249-4008, ask for Betty.

'94 DODGE CONVERSION VAN, Hi-rise, TV, VCR, Nintendo/games, 4 captain's chairs, rear sofa bed, fully loaded, 10-disc changer, $10,900. Herrera, 884-4925 or 238-6334.

'87 TOYOTA CUSTOM CAB, 4x4, 5-spd., 20K miles on new factory shortblock, 40K miles on clutch & transmission, $4,000 OBO. Zarick, 898-8840.

'95 TOYOTA 4 RUNNER, 4x4, AT, 4-dr., AC, PW, PL, ~106K miles, bids accepted through July 3, 2003, right to refuse bids, sold as is. SLFCU, 237-7384.

'99 HONDA CRV LX, 2WD, 6-CD changer, 49K miles, excellent condition, $11,500. Castillo, 898-7405 or 220-0933.

'96 CADILLAC SEVILLE SLS, pearl white/tan leather, fully loaded, 88K miles, excellent condition, $10,500. Voccio, 321-7384.

'95 NISSAN ALTIMA GXE, PW, PL, cruise, Pioneer AM/FM/CD, tinted windows, moon roof, beige, 90K miles, $3,500. Pena, 271-5222.

'77 MERCEDES BENZ, 450 SL Roadster, both tops, loaded with extras, excellent condition, $10,900, offers considered. White, 294-5692.

'94 FORD EXPLORER XLT, 4WD, 4-dr., AT, royal blue, 99K miles, very clean, $4,995. Warren, 294-5250.

'89 FORD BRONCO, 4x4, V8, AT, 2-dr., 83K miles, good condition, blue book price, $5,525, make offer. Harstad, 298-6551.

'96 PONTIAC TRANSPORT SE, V6, AT, PW, PL, power sliding door, seats 7, front & rear AC, red/tan, 37K miles, great condition, $6,200. Funkhouser, 857-9245.

RECREATIONAL

MOUNTAIN BIKES: specialized Rockhopper, LX components, $250; Raleigh M600 XT components, $500 or $675 for both. Wray, 350-8908.

'02 JET SKI, Sea Doo GTX, 4-Tec, seats 3, 4-stroke engine, only 10 hrs., 155-hp, trailer, cover, accessories, $8,880 OBO. Thomas, 294-2960.

FOLDING BICYCLE, '86 Dahon, 3-spd., 16-in., w/carrying case, used very little, $275. Kobs, 281-1102, www.dahon.com/piccolo-intl.htm.

'97 HONDA SHADOW 1100 V-TWIN, hard saddlebags, windshield, 13K miles, $3,995. Horschel, 271-9407.

'92 FORETRAVEL MOTORHOME, plush interior, walnut paneling, microwave, central vacuum, Onan generator, automatic leveling, queen-size bed. Drumheller, 281-3127.

'96 INNSBRUCK 5TH WHEEL, 33-ft., w/14-ft. super-slideout, book value, $13,500, asking, $12,000. Chavez, 866-6836.

'76 MITCHELL CLASS C RV, inside restored, Ford 350 chassis, 460 V8, 79K miles, runs great, $4,500 OBO. Potter, 299-6053.

FIBERGLASS DECK BOAT, 24-ft., 150-hp OB, w/aluminum cabin, trolling motor, ideal for fishing, camping, skiing, $7,500. Meikle, 299-4640.

'81 YAMAHA DT1, 175cc dirt bike, $350. Jones, 843-9645.

'95 DUTCHMEN POP-UP TRAILER, 10-ft., w/heater & refrigerator, excellent condition, $2,800 OBO. Lee, 797-1992.

TENT, Performance Cycle-Lite, 1- to 2-person, 4-season, similar to Sierra Clip, great condition, $50. Ludwick, 296-6447.

REAL ESTATE

3-BDR. HOME, 2 baths, 1,105 sq. ft., open floor plan, near Unser & Ladera, excellent condition, $105,000. Ramirez, 319-2002.

3-BDR. HOME, 1-3/4 baths, 1,754 sq. ft., living room, family room, dining room, large corner lot, Eubank/Indian School area, pristine, $126,900. Lujan, 293-8748.

2-BDR. CONDO, 900 sq. ft., vaulted ceilings, 1-1/2 baths, sky lights, pool, new paint, carpet, tile, kitchen cabinets, countertops, AC, furnace, $75,000. Lucero, 292-1955.

2-BDR. HOME, 2 baths, large living, dining, kitchen, large landscaped lot, near Sandia, 1,625 sq. ft., $115,000. Jones, 897-2982.

3-BDR. HOME, 1-3/4 baths, 1,770 sq. ft. (900 sq. ft., additional storage/shop/rec room), carport, large kitchen, upgrades, 4405 Palo Duro NE, $123,000. Cooper, 899-4227.

WANTED

FURNITURE, anything you are willing to give away free, couches, chairs, lamps, mattress, co-ops will pick up. Thompson, 385-7162.

DINING ROOM SET, prefer round pedestal, w/chairs; computer armoire. Gonzales, 323-9386.

KARATE STUDENTS, traditional Japanese, non-tournament oriented, nonprofit, require no contracts, call for more info. Dobbs, 286-7591.

GUITAR/BASS PLAYER, to be in a heavy band, influences: Sepultura, Soulfly, etc., must have own gear. Gallegos, 261-3217.

GOOD HOME, 3-yr.-old neutered male, Louisiana Catahoula, active, friendly, raised w/cat/dog/older children, immunizations current. Rockwell, 884-4206.

RELIABLE TRANSPORTATION, for student, prefers large, older model cars, price range $700-$1,000. Batchelor, 883-6981, ask for Shigeya.

MICROSCOPE, 900X or higher, used/new, for microbiology use, where to find in Albuquerque. Kozelka, 771-0127

ROOMMATES, either SE area near Ridgecrest or Tramway & Lomas, prefer mature female, $325-$350/mo. + utilities. Cordova, 292-4477.

WORK WANTED

BABYSITTING, 15-yr.-old girl, trained by Cariño Child Care, referral, available after July 4, negotiable rates. Lauben, 275-7466.

SHARE-A-RIDE

EAST MOUNTAIN VANPOOL, has openings, no need to drive, Frost Rd., N-14, Tijeras. Burns, 281-3922.

IES makes mark

(Continued from page 1)

about everything else: payroll, personnel, facilities management and maintenance, procurement, security — all the activities, in short, that "enabled" the Labs to open its doors for business every morning. But each of those enabling activities was managed separately. The "direct" people often found themselves having to talk to lots of different "indirect" people to get the simplest things done. What if the direct folks could talk to just one indirect folk — so to speak — to get everything done at once?

That's key to IES. It's not unlike the concept of combining related mission areas into strategic management units. The Laboratory Leadership Team (LLT), in giving the okay to the IES approach, determined that it just makes sense to streamline, to consolidate, to integrate. It's good stewardship of the taxpayer investment in national security R&D.

The impact of IES will be, by design, mostly quiet and understated. If not transparent, IES will be at the very least translucent for most Sandians. Maybe you'll just observe one day that it seems to be a lot easier to get those nagging housekeeping chores done. The business side of your work seems to be operating much more smoothly, with a lot less red tape and hassle, than used to be the case.

During its first year, Deborah says, the IES office — by design — focused internally: "getting the processes defined, getting the program leader roles and responsibilities defined and set, getting the work package owners and the activity owners identified and brought up to speed. Basically, getting the processes and structures set up. And that really was a full-time effort. During the second year — and that's where we are now —we really want to look outward at our customer and start delivering on the promise of the IES."

While it's still a young initiative, the IES team has already begun to show some tangible products. First out of the chute? It's set up a "sore thumbs" initiative to untangle those niggling "sore-thumb" issues that just never seem to get fixed (see "IES puts finger on sore thumbs," this page.) Ideally — and so far in practice — the goal is to resolve sore thumb issues within a matter of days.

On a slightly longer timescale, IES is tackling a number of so-called high-leverage projects. These are projects — identified via Labs-wide customer feedback — that hold the greatest promise of making the biggest, most useful improvements for the most people in those "big four" areas. The seven high-leverage projects are:

- Customer-Service Interface
- Integrated Response Teams
- Get/Reapply Space
- Get/Reapply People
- Integrated Moves
- Governance Changes
- Integrated Management of Property

Is IES on the right track? The folks in the IES office are proud of what they've launched, but they want an objective, outside team to help them take stock of where they stand and where they're going. Retired Sandia VP Heinz Schmitt will head up an independent review team — about half retired Sandia executives and about half from private sector — that is expected to occur in two phases. Phase One will occur in early August and Phase Two is planned for March 2004. The review team will be tasked to evaluate the value of the IES initiative to the mission and to the service providers. The team's report will help the IES office roadmap its future.

IES puts finger on sore thumbs

Doug Weaver (7001) owns the "Sore Thumbs" process. In an e-mail exchange, Doug noted the driver behind sore thumbs.

The high-leverage projects [see main story] are intended to deliver results in months. We are also working on customer-identified sore thumbs issues as they come up; on those issues, completion time is hours to days. . . . Folks expect things that are irritating them to be fixed right away!

I encourage folks to use other avenues first — sore thumbs is not intended to be a first-responder process. Sore thumbs issues are really problems that folks have tried to work themselves and either they don't know who to call, they don't know how to engage the system, or they have tried to get help and have been unsuccessful.

What am I really proud of? First, I'm really proud of how IES managers and staff respond to issues when they become aware of them. It's first-class projecting the "IES, Yes We Can" type of attitude. Examples of some cases that have been resolved:

• Helping a person who didn't have the money to enroll in the 401K program when she started, who now couldn't find the front door to the program and was too embarrassed to ask.

• Helping a secretary who was placing her personal safety at risk by driving an Easy-Go cart down Wyoming to get gas at the base gas station (couldn't find cart-refueling info on the web).

• Transitioning a number of property sore thumbs into a high-leverage project to address the whole process from purchase to disposal.

Biggest "sore thumb" issue? There are several, but the biggest in my mind is that we have not yet figured out how to quickly and simply provide information at the moment when folks need it. The information is there; the assumption is that it is too hard to find it. We have a habit of broadcasting point-in-time information when we think of it but not necessarily when people are looking for it (the new telephone number for xxxx services is....). Then we expect that folks will remember it. Everyone feels like they are bombarded with stuff (spam-like communications) and just start tuning it out. IIS, Corp. Communications, and IESO are all ruminating on this, but it's a big, difficult problem.

IES initiatives beginning to gel

Here are a few of the IES achievements so far:

• Implementation of an Integrated Response Teams approach that dramatically streamlines the steps involved (from the customer's perspective) in dealing with facility-related issues.

• An internal "yellow pages" (see the link on the Sandia internal web home page) that uses customer language to make it easier to find and secure services, both enabling services and technical services. Type in "toilet trouble" and you'll get the right number to call. A neat feature: The yellow pages has a customizable "My yellow pages" feature that allows users to easily create personalized phone lists of frequently called numbers.

• The Administrative Assistant website has brought together lots of resources that used to be scattered all over the Labs' internal web site. It's one of the "Quick Page" links at the bottom of the internal home page.

• Piloting the "Customer Service Experience Dialog" process. It's a way to help organizations clarify, formalize, and articulate expectations of one another in a pure line-of-sight implementation. Its focus is enhancing quality delivery of the total customer service experience.

Members of new Emeritus Program visit Labs

WELCOME BACK — Dennis Miyoshi, Director of Security Center 12200, gives some members of Sandia's new Emeritus Program a tour of the Homeland Defense room in Bldg. 810. The first meeting of the Sandia Emeritus group took place at the Labs June 8. The newly formed program for director level and above gives Emeritus Program members the opportunity to serve the nation by participating on panels and boards, not just as private citizens but with an association with the Labs. It is patterned after emeritus programs at universities and some companies.

(Photo by Randy Montoya)