It's closing: After a half century of service for Sandians, Coronado Club closing its doors for last time on Oct. 1

By Michael Padilla

After 54 years of serving Sandians, the Coronado Club will be shutting its doors Oct. 1. Until then it will continue to operate as usual.

Sandia's Integrated Enabling Services (IES) leadership made the decision after an evaluation of renovations and operating costs versus the benefits received by an ever-decreasing number of members, (*Lab News*, Nov. 14, 2003).

"We expect it to be 'business as usual' through September."

A study team was formed to assess the continued need for the services — lunch-line, catering, meeting space, recreation — offered at the Coronado Club. For each service, the team identified who the primary customers are, how many customers use the service, how frequently the service is used, and if the service is currently being adequately provided from another source.

The team also evaluated options for providing services for which there is a continued need. It identified possible providers and concluded whether it is more cost-effective to buy the service from commercial providers or to provide the service from within Sandia.

"We expect it to be 'business as usual'

(Continued on page 4)

TAKING A DIVE — C-Club lifeguards leap with abandon last Friday from the twin diving boards at the Coronado Club pool. The children of three generations of Sandians learned to swim and dive here. (Photo by Randy Montoya)

Sandia LabNews

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Sandia National Laboratories

Sandia welcomes new security director June 1

Labs security 'on path to wellness,' but there's much to do

By John German

Retiring Air Force Col. Michael W. Hazen joins Sandia next Tuesday, June 1, as Director of Safeguards and Security Center 4200. He will lead all security-related operations at the Labs, including oversight of the protective force and management of personnel, physical, and information security.

Col. Hazen replaces Dennis Miyoshi, who was named director of what is now Center 4200 in March 2003 as part of Sandia's response to concerns about and investigations of the Labs' security apparatus.

MICHAEL HAZEN

"Dennis has done a great job of getting us on the path to wellness in a very short time, and I am appreciative and impressed with the improvements his team has been able to make in one year," says Ron Detry, VP for Integrated Security Div. 4000.

As planned, Dennis will return to lead the security technology R&D organization from which he came, Security Systems and Technology Center 4100.

Dennis agreed to the six-to-twelve-month temporary assignment as director of security last year at the request of Labs President C. Paul Robinson.

"I'm pleased that Dennis will remain within the division and be able to take his operational

(Continued on page 5)

Multimedia Web tool makes it easy to access insights of retired weaponeers

Knowledge Management Program introduces streaming video

By Bill Murphy

Knowledge is power, so the saying goes, but deriving knowledge from raw data is no easy thing. Sandia's new classified streaming video capability, Knowledge Management Streaming Assets Library (KM-SAL), makes the process of getting your hands on video data and turning it into information as efficient as it is likely to get.

To understand the value-added benefits of KM-SAL to the Labs, consider Sandia's Knowledge Preservation Program. You may have heard of it; when it was launched about 10 years ago the idea was to capture the knowledge of retiring weaponeers about the work they had done on various weapons systems in the stockpile. Knowledgeable old hands were interviewed — in classified settings — about how and why they did things the way they did; how they solved problems; how they brought their scientific engineering insights to bear on some of the most daunting technical challenges the human mind has yet tried to tackle.

These exit interviews have been almost universally valuable, occasionally even catching lightning in a bottle, preserving true, almost literally priceless, weaponeering information in a video format.

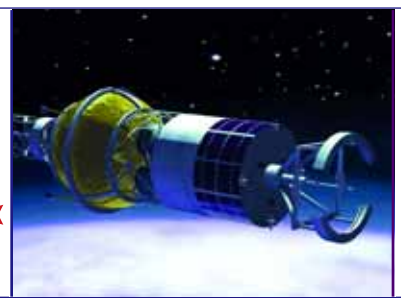
But here is a paradox: The subject matter expert's knowledge is there in the videos, all right (the interviewers themselves have proven to be uncanny in their ability to draw compelling, detailed narratives from their subjects). But in their raw form, the videos are not knowledge; they're just data. It's the ability to draw out relevant pieces of data and reintegrate them in new, coherent ways that transforms data back into knowledge.

Thanks to the Knowledge Preservation Project (KPP), the current generation of Sandia weaponeers (who may have missed out on the mentoring and apprenticeship opportunities available to an earlier generation of designers) is about to gain access to some 1,900 hours worth of weapon design-related data. Until now, though, it has been difficult to drill into that data pool in an efficient way. And because of that difficulty, the data stored on those hours and hours of video files has not made the return trip from data back into usable future information.

Until now.

A team headed by John Shaw, Weapons Knowledge Management Dept. 2911, was tasked to make the information contained in the knowledge preservation videos more accessible. Not that similar efforts

(Continued on page 5)



What's what

Retro is "in" and we like to stay up with the times, so with this issue, the *Lab News* reintroduces a once-a-month column that we ran in the early 1990s — "This month in the past" — but stopped for reasons no one here remembers. (We may be forgetful, but we're honest . . . well, usually.) The columns won't be detailed history lessons, but brief notes about Sandia highlights, lowlights, whimsical happenings, and maybe occasional photos from our archived *Lab News* files. We'll feature items from an even 10, 20, 30, 40, and 50 years ago but won't necessarily have something from all five decades each time. Our first look in the Sandia rear-view mirror is on page 16. Enjoy.

* * *

Carl Hawk, who retired in 1974, wrote a few lines recently in response to a column note about former Sandians who've made marks in the arts. After working as an engineering staff assistant for years, Carl moved to the Tech Art group in 1960 and remained there until retiring.

"To me," he wrote, "there was more diversified talent in the Tech Art group than in any other organization of that size at Sandia. We were featured many times in the *Lab News* and in both Albuquerque newspapers."

Although Carl sketched and drew cartoons during his five years in the Navy and after joining Sandia in 1951 ("I have a small collection of cartoons I drew while at Sandia. They bring back memories."), his real artistic expression has always been in building cars. Not just customizing — although he's done some of that, too — building cars from the ground up.

A few days after writing, he sent a copy of a story about him and his hobby that appeared in the July 30, 1954, edition of the *Lab News* and a copy of a photo montage showing a now white-haired Carl — he was a redhead at the time of the '54 story — sitting in the cockpit of a Troy, a one-of-a-kind hand-built roadster belonging to a friend and fellow sports car aficionado. A photo published with the '54 story showed him tweaking something on the left front wheel of "Dukeann," his hand-made custom car of that time.

"You could do a whole *Lab News* on just the Tech Art folks," he wrote. And he's undoubtedly right.

* * *

One of our cheerful students came around handing out little blue cards with Lockheed Martin's ethics message several days ago. It has a slot punched in it so you can string it on your badge holder and have it handy in case you feel an ethical lapse coming on and need to recharge yourself.

As three or four of us stood around stringing our copies and chatting about them, one counted up the nine things hanging from his badge holder (including his badge) and said idly, "I wonder who at Sandia has the most stuff in his (or her) badge cluster."

Good question. How many do you have? And what are they?

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

Sandia LabNews

Sandia National Laboratories

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LOCKHEED MARTIN

Sandians propose plan to simplify security measures for bioresearch

By Neal Singer

One-size-fits-all federal regulations locked into place at the nation's biological laboratories to improve security against terrorism after 9/11 may be impeding useful biodefense and public health research, say Sandia researchers Jennifer Gaudioso and Reynolds Salerno (both 6928) in a paper published in the April 30 *Science*.

The terrorism threat is real, but most experts would agree that Rocky Mountain Spotted Fever presents less danger as a biological weapon than anthrax, write the authors. However, current regulations require the same security measures for both.

Among the problems, the writers suggest, is the proposition that any biological agent or toxin on the regulated list requires security, while those not on the list need none.

The researchers suggest instead a security risk assessment procedure that would place pathogens and toxins in one of four biosecurity levels, similar to a color-coding system. The overwhelming majority of pathogens would fall into the low-risk category, requiring procedures as minimal as locking doors. Most of the commonly dangerous agents would land in the moderate risk category, requiring access controls and personnel checks. Already-in-place biosafety measures would keep costs down.

By this process, "high risk" or "extreme risk" — the two top categories — would be limited to the very few organisms that represent true weapon threats. Only labs working with those organisms would be subject to the extra expense in security these agents would require.

This graded response, the authors feel, "would remove the ambiguity of the current regulatory approach and facilitate continued biomedical and bioscience research."

They note that the expense of the "black-and-white" approach has led to a sharp decline in laboratories registering to do work on threatening biological organisms of every stripe.

The Center for Disease Control expected 817 labs to register to examine and control regulated biological agents; instead, only 323 facilities registered.

"Actions such as these [responses to undifferentiated regulations]," write the authors, "will suffocate valuable public health and biodefense research, which will further compromise our ability to respond to bioterrorism and infectious disease outbreaks."

Jen and Ren are staff members of Sandia's Chem-Bio Nonproliferation Department who work to secure dangerous pathogens and toxins against theft and sabotage. They have worked on biosecurity issues at many federal facilities.

Presentation on Medicare Modernization Act, prescription changes June 10

The Sandwich Support Group, which consists of Sandians supporting aging loved ones, will host a presentation by the New Mexico State Agency on Aging along with the Senior Citizens Law Office on the new Medicare Modernization Act "MMA." The presentation, Thursday, June 10, from noon to 1 p.m., will address some of the MMA's most significant provisions — primarily those establishing new prescription drug coverage under Medicare (effective 2006), and the Medicare-endorsed prescription drug discount card program that starts June 1. The presentation will be in the Steve Schiff Auditorium in the Technology Transfer Center, Bldg. 825. All Sandians and Sandia retirees are invited. Questions to Dick Steele, Dept. 3004, 284-4353, rsteele@sandia.gov.

Sympathy

To Terry Ernest (1733) on the death of his mother, Iris Sue Ernest, in Joplin, Mo., May 8.

To Diana Stavros (10267) on the death of her father, Jim Stavros, in Albuquerque, May 11.

To Larry Tolendino (9334) on the death of his mother and to Chris Tolendino (3135) on the death of her mother-in-law, May 11.

Retiree deaths

Lois M. Easton (age 88).....Dec. 29
Marian C. Weiss (82).....March 13
Helen Lyons Kluver (93).....March 14
Florencio J. Mora (88).....March 15
Peter J. Komen (85).....March 20
Louis D. Lindsay (73).....March 21
Wilburn E. Walker (89).....March 21
Dennis R. Benedict (79).....March 23
Fredericka L. Juhasz (71).....March 24
Johnson C. Hays (84).....March 26
Donald L. Tyson (92).....March 27
Felix Hendren (91).....April 1
James A. Hawkins (69).....April 1
Violet M. Bernard (87).....April 3
Lorraine G. Cook (80).....April 3
Kenneth K. Hykes (85).....April 7
Dwight L. Russell (94).....April 8
George P. Steck (79).....April 13
Harold G. Short (73).....April 15
Brad Oliver Shaw (85).....April 20
Kenneth G. Adams (71).....April 21
Wayne T. Welkenback (90).....April 23
Bert W. Lindsay (86).....April 26

Security master's program graduates first students

By Nancy Garcia

The first group of students to graduate from a unique master's degree program in National Security offered at Sandia/California through the University of New Haven were feted in April in a luncheon with classmates, faculty, and friends and relatives.

By the end of the month, at least seven students were expecting to receive their master's of science degree in National Security and Public Safety. Since the program launched in January 2003, more than 30 students have registered to attend evening and weekend classes at the site, as well as taking online courses. Instructors are expected eventually to include Sandia security experts.

"What we're learning is living history. Everything that's on the news is what we are studying."

"These professors are the 'Who's Who' in the field they've been teaching in," says Pavan Gill, a member of the Contra Costa County (Calif.) Sheriff's Department who works in its Homeland Security Unit and was graduating in April with a concentration in Information Protection and Security.

The first student to complete coursework and a research project was Joy Muller, who said she received her degree Jan. 17. She interviewed county emergency preparedness coordinators involved in national security in Washington state about interagency coordination and bioterrorism, and provided a PowerPoint version of her interviews to the school for potential use as a reader for students.

"I wanted to show since the establishment of the Department of Homeland Security this is how all the agencies are supposed to work together," she says.

A collaboration of the Criminal Justice and Political Science departments at the University of New Haven, the program is administered by the Dean's Office of the School of Public Safety and Professional Studies and operates both at the main campus in West Haven, Conn., as well as being hosted by Sandia in California.

Muller said she learned about the program through news media reports and an online search. She called the university, received a call back at home from Dean Thomas Johnson, director of the School of Public Safety and Professional Studies, and less than a month later was sitting in class.

"I felt like it was meant to be," she says. Like many of the students, she had been a technical expert who had managerial duties (in emergency planning) prior to enrolling. Johnson said the program administrators are very proud of their students.

Muller lauded the learning environment created by the students.

"I think it's a fantastic program," she says. "What we're learning is living history. Everything that's on the news is what we are studying."

Jason Dunton, who moved out from Massachusetts to attend the program and plans to start an alumni program after he graduates in July, said it has "really been a life-changing experience." He is working for a Department of Homeland Security agency, the Transportation Security Administration, and hopes to become an intelligence analyst. On the whole, the students are being prepared to assist efforts to assess and respond to security threats through jobs in government or intelligence agencies, among other employers.

Echoing Muller's comments, new graduate Mark Ward praises the "synergy between outstanding faculty and great students." His degree concentrated on information protection and security.

Sheryl Stewart (8528) helped arrange for the program to be offered on site and responded to inquiries. "We didn't know what to expect," she says. "At least 250 to 300 people applied. It's been very exciting."

Adds Barry Hess (8941), program manager for Cyber Security Strategic Initiatives, "We were convinced this is something Sandia should be a part of, and we are still convinced of that."

One Sandian, David York, 6863, is currently enrolled. (David notes that national service goes back a long way in his family since his great-great uncle Alvin York received the Medal of Honor as an Army sergeant in WWI.)

The keynote speaker at the luncheon was Carol Haave, Deputy Undersecretary of Defense in Counterintelligence and Security at the Pentagon.

Countering threats, she said, involves piecing together a jigsaw of voluminous amounts of information using different capabilities such as modeling and simulation, threat analysis, data mining and correlation, and plain old gumshoe work. At what point do you know what the picture on the front of the box is — without benefit of knowing what the picture on the front of the box is? It's not an easy challenge to be predictive, much easier to prove an event in hindsight when the picture is known.

"We want people to think about security," she said, "but we don't want them to be fearful." She continued, "A powerful military allows us to do something for good, and good is something that is described differently through the course of time."

She called for "inculcating into each consciousness that we touch" an awareness of security, realizing that "there're not enough dollars in the US treasury to protect all our military installations, bases, and adjunct facilities.

"Leadership is important and that is where you come in," she added. "I think there are limitless opportunities; it's very important to the nation and the world. You represent the leadership of the future."

Muller composed a poem acknowledging the program administrators and faculty, concluding that, "as national security professionals, we are now in the know."

The program was recently featured on the Osgood File. To see a transcript, visit http://wcbs880.com/osgood/osgood_story_106024652.html; a story based on this nationally syndicated radio program is at: http://www.acfnewsource.org/science/security_degree.html. Finally, the University of New Haven's website describing the course offerings and requirements is at: UNH: http://www.newhaven.edu/psps/nationalsecurity.html.

Sandia CaliforniaNews

Ray Orbach visits Sandia/California Combustion Research Facility

VISITING THE Combustion Research Facility at Sandia/California on a recent Saturday was Ray Orbach, director of DOE's Office of Science. In the picture at left Rob Barlow (8351) addresses the group. From left to right are Rob; Principal Deputy Director James Decker; Chief of Staff Jeffrey Salmon; Sarah Allendorf, Manager of Combustion Chemistry Dept. 8353; Jackie Chen (8531); Pace VanDevender, VP 1000; Habib Najm (8351); Orbach; and Michael Strayer of the Office of Advanced Scientific Computing Research. In the picture above, Jackie Chen is discussing direct numerical simulation. Orbach expressed a strong commitment to DOE's energy security mission including programs at Sandia. He voiced support for programs at the Combustion Research Facility, which is an Office of Science user facility. He also challenged those attending to apply large-scale supercomputing to address complicated scientific issues in combustion.

Coronado Club

(Continued from page 1)

through September," says Larry Clevenger (3300), Director of Sandia's Benefits and Health Services. "We will be having a summer program and 'sub-clubs' can continue their activities."

This year's retiree picnic (May 27) will be held at the Coronado Club, and meeting space can be reserved and lunch will continue to be served until October 1.

"Our goal is to make it a very smooth transition," says Larry.

The following are the findings for each service/program provided at the Coronado Club. Becky Statler (3341), study lead, released the results.

Lunch line

Lunch line customers can be absorbed by the other facilities on base. The lunch line serves an average of 388 customers a day. The customer breakdown is about 129 Sandia "walk-ins," 95 meeting attendees with and without a lunch ticket, 78 military personnel, and 86 retirees or swimmers.

The team has identified alternatives for lunch including the Thunderbird Café, the DOE Snack Bar, a roving BBQ, the Mountain View Club located on the east side of KAFB, and other military facilities including the bowling alley and BX.

Catering

The Thunderbird Café, DOE Snack Bar, or community providers can handle catering needs, the study found. The Coronado Club fills approximately 44 orders a day. However, the number of orders has been cut by a third and has continued to decline since corporate policy and practices with respect to business meeting meals and refreshments have been tightened.

Meeting and Conference Space

A more formal assessment of the need for, and design of, a conferencing and meeting center will be conducted. The Coronado Club hosts on average 29 events a week. Two of the 29 are large events with an average of 124 attendees. Twenty-four are meetings or classes that average 23 attendees. Three are private events — weddings, graduation parties — with an average 146 attendees. The alternatives identified included finding or building a new conferencing and meeting facility, using the Mountain View Club, or using the Thunderbird Café during off-hours and weekends. In the short-term using the Mountain View Club is a good alternative, but it isn't a long-term solution, according to the study results.

Recreation

Recreation was separated into two groups: the Sandia Employee Recreation Program (SERP), and social and recreational services.

Responsibility for SERP will be moved to the Benefits and Health Services Center. SERP customers include approximately 1,500 participations in sports associations (basketball, bowling, soccer, etc.); 500 attend classes or seminars (scrapbooking, financial planning, fitness, etc.); 4,000 attend special events (Beach Waterpark, Scorpions hockey, Sandia Motorspeedway, etc.). Since SERP is funded separately, it can continue to operate from a different facility.

Financial support of the social and recreational activities will be discontinued Oct. 1. Sandia will work with the Air Force to negotiate an arrangement whereby Sandians may join the Mountain View Club. Information will be provided to Sandians about the Manzano Mesa Multigenerational Center and any other alternatives that may be identified.

General membership has steadily declined since 1997. Currently, 7 percent of eligible retirees are members and 10 percent of eligible employees are members. Sub-club membership numbers are: Thunderbirds, 242; Aquatic Club, 123; Tennis Club, 98; Junior Tennis, 48; and Ski Club, 48. Approximately 550 families purchase pool and patio passes in the summer.

According to the study, club social and recreational activities were intended to be supported by membership dues. The membership decline has made it exceedingly difficult to continue funding the activities. When the facility is closed and member dues are no longer collected there will no longer be funds to support the social and recreational activities of the club and sub-clubs.

The study team has begun discussions with the Air Force concerning the possibility of Sandia employees and retirees joining the Mountain View Club. It has the capability of providing most of the activities currently offered to Coronado Club members and it appears that dues would be comparable to what members pay now, says Becky.

Currently, without being members, Sandia employees can eat lunch and reserve meeting space at the Mountain View Club.

Another alternative to member services is the Manzano Mesa Multigenerational Center located on Southern Boulevard just east of KAFB. Manzano Mesa has classrooms, a computer laboratory, a social hall, a fitness center, a kitchen, a gymnasium, a shower room, lockers, and office space. It offers several types of classes and sponsors a variety of hobby groups.

Swimming pool

The swimming pool will be open this summer and will be closed at the end of the season. Passes will continue to be accepted at the pool.

Fate of the Facility

The Coronado Club is a Sandia facility that sits on DOE land. Although plans for the building's future have not been finalized, it will most likely be demolished when funds are available.

"I know that people will miss the Coronado Club," says Larry. "It was a difficult decision."

The Coronado Club in Sandia memory

The **Coronado Club** had its grand opening on June 9, 1950. Some 2,500 people turned out for the festivities. The *Sandia Bulletin* (predecessor of the *Lab News*) touted it as "your brand new social and recreation center." It featured a dining room, "gleaming kitchen," cocktail lounge and bar, and "four fine bowling alleys downstairs." (Those bowling alleys were converted to meeting rooms in 1965.) Dances and themed parties — the photo on the right is from a 1954 "3000 A.D." party — were a long-time staple of the club. Twelve Sandians served on the initial Board of Directors: H.F. Gunn (president), T.B. Sherwin (VP), R.J. Hansen (Secretary), R.E. Roy (Treasurer), Dorothy Youel (Recording Secretary), R.W. Henderson, L.J. Heilman, H.W. Sharp, Geneva Bishop, D.F. Worth, J.L. Rowe, and T.G. O'Hara. The club manager was Charles Williams. A *Lab News* article on the Coronado Club's 50th anniversary in 2000 (June 16, 2000), titled ". . .a fond look back," called the facility a "lunchtime retreat, after-hours gathering place, and social club to generations of Sandians."

Education fair brings university reps to Sandia

LET THAT BE A LESSON TO YOU — More than a dozen universities took part in Sandia's Education Fair held recently outside the Thunderbird Café. The event was hosted by Sandia's University Programs office, a Program of Corporate Education, Development & Training. (Photo by Randy Montoya)

Streaming video

(Continued from page 1)

hadn't been undertaken before. It was recognized right from the start that wading through dozens of hours of video files to find the two or three minutes you were interested in wasn't very efficient.

A couple of homegrown solutions to the data-mining challenge were tried over the years; while they were okay, they didn't really bring a compelling level of robustness, functionality, and ease of use to the task. And the technology didn't cooperate: analog videotape is a good storage medium, but isn't nearly as search-friendly and retrievable as digital files stored in non-linear magnetic or optical media.

If the knowledge preservation materials were to have practical value, a better way would have to be developed for weaponeers operating in a classified environment (such as the Sandia Classified Network) to get at the nuggets of information and the flashes of insight that would help them do their jobs.

"We in 2900 decided to form a group of people with expertise to analyze various COTS [commercial off the shelf] products that would work in a true nuclear weapons complex enterprise mode," John says. "Tamara Orth, 2911's Weapons Knowledge Management Program Project Manager — who already had under her belt leading the effort for Web FileShare's initial SCN deployment — was added to my staff to help expand and integrate KM-SAL's capabilities with other on-going Weapons Knowledge Management Program activities."

Tam recalls that the development team (Collaborative Environments, 6223, Marge Petersen, Project Lead) looked at several packages, all of which had pluses and minuses, but none seemed just right, until a small company, Virage (recently acquired by and integrated with Autonomy), got the team's attention.

"They got wind of what we were looking for and they actually called us," John says. Their tool, specifically Virage VS Archive, had a terrific feature set. Here's how the Virage website describes its product: "Virage VS Archive is a content management solution to efficiently store, categorize, manage, retrieve and distribute video, audio and other rich media content." The Virage package also included a piece of software that would automatically convert speech to text and another part that would capture and synchronize PowerPoint slides with the video streaming. Bingo.

"It does what we needed," Tam says, adding that it is very adept at handling classified video media, with built-in security tools and need-to-know authentication. That's not surprising, since it was actually created for the super-secret National Security Agency — "America's Codemaker and Codebreaker," says its Web site. And Lockheed Martin was using Virage in its classified aviation enterprise.

Virage's utility, though, isn't limited to classified. It is, for example, the tool of choice for delivering streaming data at the National Public Radio (npr.org) Web site.

The Virage/Autonomy tool is the foundation of KM-SAL, but keeping the tool functional requires an on-going team effort.

"Video Services [Dept. 12620] owns the equipment and they continue to find ways to improve the service," John says. "They've been instrumental in making KM-SAL more lively and interactive. And they're going to be very key players in making this [resource] better and better as it goes along."

Also, he says, CSU Special Projects Dept. has been instrumental in creating new thin-client solutions — ideally suited for classified computing environments — that will support this application and make an even more capable set of solutions for the future.

John says that ultimately, through secure, classified connections, KM-SAL may make Knowledge Preservation content available complex-wide.

While the driver behind KM-SAL was the treasure-trove of Knowledge Preservation video interviews, the capabilities of a suite of Virage/Autonomy tools extend well beyond retrieval of archived material. And Knowledge Management is more than an archiving function — it means getting knowledge to those who need it in a timely and efficient way. As such, KM-SAL is already being used to deliver, in a classified setting, interactive multimedia weapons courses. In addition, it will be used in both classified and non-classified networks, for streaming presentations of interest to Sandians. And it can be used to preserve important design review meetings that occur each day or multiagency colloquiums where knowledge and information density is very high.

"When I first came to this department three and a half years ago," says John, "the question that needed to be answered was 'What's the value of information-sharing in nuclear weapons work?' I think KM-SAL answers that question.

"We aren't close to being finished with the project," he says, "but we have created the right foundation to build on for the future."

"We aren't close to being finished with the project, but we have created the right foundation to build on for the future."

Check it out:

http://srn-vss.sandia.gov/vas/accounts/admin/main.htm

In a nutshell: The challenge and the response

The challenge: Sandia's Knowledge Preservation Project is designed to record the knowledge, experience, and ideas of key nuclear weapon design engineers for reuse by others. The project attempts to capture all aspects of perishable, undocumented, nuclear weapon design, testing, and manufacturing information. Areas of discussion include technologies, components, testing, materials, systems, and management/political interactions (as they impacted the weapons program).

The response: KM-SAL aims to make recorded information easily available via a streaming video capability that enhances the exchange of knowledge among weaponeers, weapon interns, and weapon instructors. Sandia has 1,900-plus hours of Knowledge Preservation Project (KPP) videos. KM-SAL provides useful access to these videos. These videos must be need-to-know-controlled and searchable by text, topic, and presentation slides via the desktop. KM-SAL also provides an unclassified retrievable resource of weapons information videos.

A Labs-wide team

Here are the organizations and individuals that helped make KM-SAL a reality:

- Hank Witek, Military Liaison & Knowledge Management Group (P&CI & cyber funding, sponsorship and creating a vision for the effort)
- Weapons Knowledge Management Department (Owner & Knowledge Management Program Areas Integration with KM-SAL)
- Technical and Compliance Training Department (Integrated Learning Technologies using KM-SAL)
- Collaborative Environments Department (IT Development Group for KM-SAL)
- CSU Special Projects Department (IT Support & System Maintenance Group for KM-SAL and new client development)
- Video Services Department (Videography Specialists)

Hazen

(Continued from page 1)

experience back to the R&D side," says Ron.

Ron Moya, current acting director of Center 4100, will be moving to a new assignment in the fall and is in the process of choosing one of several possible summer assignments.

Hazen began as a sentry

In replacing Dennis, says Ron Detry, the search team sought someone with a broad list of strengths, including an understanding of security operations and regulatory environments, demonstrated leadership and operational management experience, knowledge of the DOE system, and resonance with the idea of incorporating new technologies into security operations where appropriate.

Col. Hazen began his 31-year Air Force career as a guard at a gate, he adds, working his way through the ranks to take on major leadership and policy responsibilities for the Air Force. His bio is available at http://www.peterson.af.mil/hqafspc/library/bios/Bios.asp?BioChoice=41.

Hazen most recently served as Director of Security Forces at Air Force Space Command Headquarters, Peterson Air Force Base, Colo. In that position, he led an organization responsible for security policy guidance for NORAD and US Space Command headquarters and units worldwide, including security of the nation's ICBM force. His role included providing personnel, equipment, and training for security force units with more than 4,000 security force personnel worldwide.

"Col. Hazen has experience with nuclear weapons on the Air Force side, as well as experience acquiring security technology from Sandia and other places," says Ron. "I was delighted to find someone with so much relevant experience."

A critical juncture

Hazen will join the Labs at a critical juncture in the history of Sandia's security operations, says Ron.

Earlier this month, Energy Secretary Spencer Abraham announced the likelihood of sweeping changes in security policies and practices at all DOE sites.

In addition, says Ron, "the ship is no longer sinking. It still needs work, but it is not a matter of fixing a broken organization. It's a matter of continuously improving a good one."

Ron lists several changes made since March 2003, including reconstituting the Safeguards and Security organization and staffing it with capable Sandians from across the lab (including people from the former Integrated Safety and Security Center), establishing a new top-notch management team for the protective force, hiring some 35 Pro Force officers, and reducing overtime hours.

Training also has been improved and made more consistent, and post orders (work instructions followed at security posts) were rewritten with input from the officers responsible for following them.

Progress has been made in matching security force needs with available technologies, and Center 4100 strategic R&D plans have been better aligned with future Pro Force technology needs, although there is still a long way to go, says Ron.

Substantial improvements

The Labs also has catalogued and prioritized deficiencies, culled from 500 findings and recommendations from security audits dating back to 2001, and sought ways to address these deficiencies systematically and measurably rather than piecemeal, says Ron. Simultaneously, Center 4200 has developed a process for verifying completion of corrective actions that has captured the attention of high-level officials at NNSA headquarters as a possible best practice.

The Security Standdown last fall raised the level of security awareness lab-wide, he says, and the recent kickoff to the Security Awareness Campaign drew more than 1,000 Sandians. Feedback received indicates Sandians want to know how they can improve security practices.

"This is a substantial group of improvements in a year," he says.

Hazen's initial priorities, says Ron, will be to continue to address deficiencies in a number of areas that require coordination with line organizations, including improving policies and practices in personnel security, marking and control of classified materials, and control and accountability for nuclear materials.

"This is Col. Hazen's 18th command change in his career, so I know he'll hit the ground running," says Ron. "I know he'll forward process and policy improvement that are supportive of Sandia's mission and meet NNSA's expectations."

Living with beryllium: Sandia's handling of beryllium focuses on health, safety of all employees first

Questions on history, current status, health concerns answered

Beryllium may be found in soil, in copper parts, and in Sandia buildings.

Concerns about the latter were raised in December 2003, when employees noted differing work practices being used in two portions of Bldg. 983, where Sandia's Z machine resides and where beryllium is routinely employed in experiments (*Lab News*, Feb. 6, 2004). Since then, Sandia has taken extra precautions in ensuring that traces of beryllium are either cleaned up or controlled as appropriate throughout the Labs, as the health and safety of Sandians is the number one priority.

Al West, Director of ES&H and Emergency Management Center 3100, and Dr. Larry Clevenger, Director of Sandia's Benefits and Health Services, recently took some time to answer questions concerning this issue. Michael Padilla of the *Lab News* conducted the interviews.

***Lab News*: Can you define beryllium, and tell us what its uses are?**
Al West: Beryllium is a lightweight metal used in the nuclear weapons program and commercial industry because of its unique properties. One use is as an alloying agent in producing beryllium copper. This metal is used for various applications including electrical contacts, spot-welding electrodes, and non-sparking tools. Beryllium is also used as a structural material for high-speed aircraft, missiles, spacecraft, and various communication satellites.


AL WEST

LN: Where can beryllium be found?
AW: Beryllium can be found in various household products including golf clubs, various ceramics, and appliances. Other uses include eyeglass frames, car brakes, support beams, and some structural components. Beryllium, which is a natural metal, can be found in soil and, with the dry, windy nature of the Albuquerque climate, detectable levels of beryllium can exist on surfaces throughout Sandia from the soil.

LN: How does DOE regulate beryllium?
AW: DOE is concerned about both airborne beryllium dust and beryllium surface contamination. In 1999, it finalized requirements for a "Chronic Beryllium Disease Prevention Program" and specified compliance by Jan. 7, 2002. The regulation was developed to reduce airborne exposure to beryllium particulates by DOE workers. The desired outcome was a reduction in the prevalence of chronic beryllium disease from inhaled beryllium particulates in the DOE worker population. The regulation provides the opportunity for workers who are concerned that they may have had past or current beryllium exposures to participate in a medical surveillance program.

LN: How is this measured?
AW: The surface contamination measurements are expressed in tenths of micrograms per 100 square centimeters. This is less than a millionth the amount of material found in a packet of sugar substitute such as Sweet 'N Low on an area the size of a piece of toast.

LN: What are some causes of beryllium hazards?
AW: Beryllium dust can be created by many industrial activities such as grinding on a piece of metal, the making and breaking of electrical contacts in bridge cranes, or the destruction of certain components removed from nuclear weapon systems during the demilitarization process.

LN: Can you briefly explain the history of the beryllium issue at Sandia?
AW: Beryllium has been used by Sandia since its founding. Because beryllium is a toxic material, it has always been subject to various levels of industrial hygiene control. We wrote our first Chronic Beryllium Disease Prevention Program, or CBDPP, in 1997 in response to the DOE directive. Then, Sandia ramped up its controls for beryllium to comply with the new DOE regulations and rewrote the CBDPP. We operated under that plan until December of 2003 when some Facilities employees noticed that several other employees were wearing protective gear in Bldg. 983 while working near and around the Z machine. The employees wearing the gear were taking precautions because of construction taking place in the area and there was concern that beryllium surface contamination in the form of dust could get stirred up as work was performed. Some of the beryllium levels were above DOE's mandated clean-up level, so operations were temporarily suspended to conduct additional inspections and to decontaminate one area that previously housed a grinding activity. The building reopened in February 2004 under a revised CBDPP. Around the same time period, beryllium surface contamination was also discovered in Bldgs. 981 and 970 in Area 4.

LN: In other buildings?
AW: In April of this year, Bldgs. 809 and 867 were tested for beryllium as part of our expanded effort to identify beryllium surface contamination Labswide. Both facilities are temporarily closed as a precaution until the results are analyzed and more data collected. Because beryllium contamination was found, employees were offered voluntary participation in Sandia's existing beryllium medical surveillance program. In fact, any employee in any building with any concern about their possible exposure to this metal in the workplace is encouraged to contact Medical for a beryllium screening.

LN: What is being done now?
AW: We are continuing to sample Sandia buildings using a prioritized list of locations where beryllium might be present due to the type of work done in that facility. Only five buildings have returned positive results to date. However, I suspect there will be more buildings.

LN: How are Sandians warned about the hazards of beryllium?
AW: Workers in areas where beryllium hazards might be present are notified of beryllium-associated hazards through signs, training, and ES&H work documents such as operating procedures and health and safety plans. These work documents identify the hazards and control measures necessary to mitigate hazards. Beryllium awareness training is required prior to gaining unescorted access in several buildings at Sandia. Additional beryllium worker training is required to gain access to any of the three beryllium-control areas within the Z machine.

LN: What is the best way to handle beryllium?
AW: The best advice I can give to employees is to wear personal protective equipment if they must work in or around beryllium and its compounds when the levels are above those specified in the regulations. No attempt should be made to work with any beryllium-containing material before becoming familiar with proper handling safeguards.

LN: What have been some challenges in dealing with this issue?
AW: Because beryllium is naturally present in the New Mexico soil, and because we have a very sensitive process for detecting it, we can find beryllium in many places at the laboratory. Some windowsills have levels of beryllium from the soil that exceed the regulatory limits for equipment or items being released to the public. In addition, because of recycling practices, much of the copper in use today has measurable quantities of beryllium in it. We thus find beryllium near bridge cranes and around screen rooms. Furthermore, some of the materials formerly used in the weapons program were not regulated, as they would be today. Thus we have to deal with issues associated with legacy beryllium contamination, which is why we are surveying for beryllium Labswide and looking for sources of contamination that we did not consider the first time around.

LN: What else should Sandians be aware of?
AW: The good news is that, in spite of our ability to detect minute amounts of beryllium, the risk of significant exposure in the workplace is very, very low. For instance, at the Z machine, which is the one operational area at Sandia where beryllium is handled on a regular basis, since the year 2000, the DOE personal breathing zone action level has been exceeded only once while workers were performing hardware cleaning, and procedures were changed as a result of that event. Furthermore, since last October we have taken more than 100 additional personal breathing zone air samples for workers doing a variety of tasks in Bldg. 983 and none have exceeded the action level. This gives us confidence that the protective measures in place are doing the job of preventing exposures. I am also sure that we will continue to find more instances of beryllium in the workplace as we examine more buildings. When that happens, we will take suitable precautions to protect our workers as we rectify the situation. This will cause some work disruptions as it has in Bldgs. 983, 867, and 809, but we will try to minimize the impact of such events. Our first commitment is to the health and safety of our workers. With that in mind, we acknowledge that we have customer deliverables to meet once we are sure that we can do so in a safe manner.

LN: What are some health concerns with beryllium?
Larry Clevenger: The largest concern about beryllium is related to respiratory, or lung and breathing effects. Conceptually, short-term exposure to high levels of airborne beryllium dust without protection can cause an acute pulmonary disorder resembling pneumonia or bronchitis. While this has been described in the medical literature, contemporary industrial hygiene controls and worker safety practices have largely eliminated exposing higher levels of beryllium as an occurrence. Low-level exposures resulting in Chronic Beryllium Disease (CBD) are now the issue that has prompted many actions throughout DOE and in industry. Here, the concern is related to long-term effects that may not be manifested for many years after a low-level exposure. The new findings about beryllium suggest the health effects are related to an immune response that may occur in some individuals who are genetically susceptible to beryllium and the effects may, in a small number of cases, cause a form of chronic lung disease with symptoms similar to emphysema or other


LARRY CLEVENGER

(Continued on next page)

Beryllium

(Continued from preceding page)

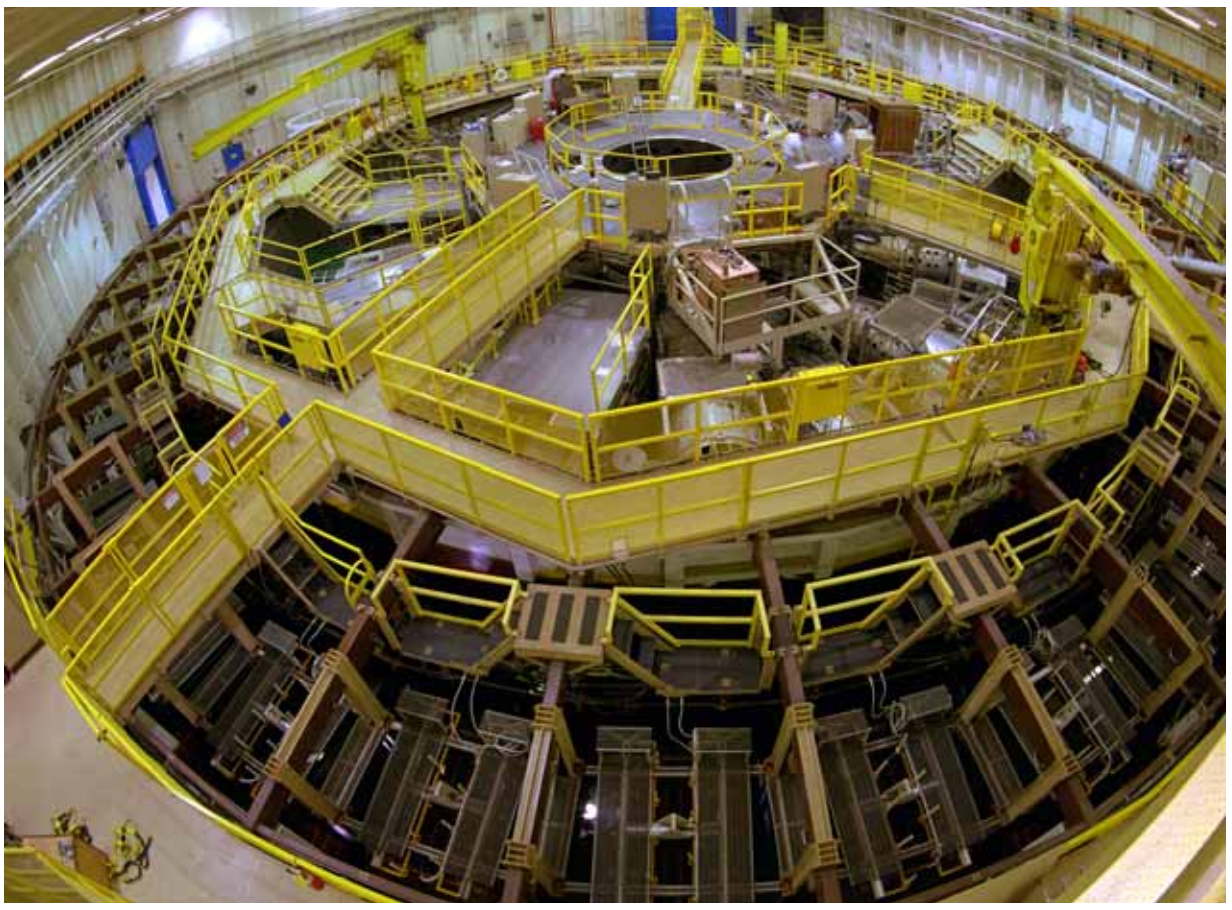
chronic lung disorders.

LN: What should Sandians do to ensure that they are not exposed to beryllium?
LC: As Al identified, Sandia is taking aggressive steps to determine where beryllium may have been used at Sandia. This characterization is the first step in establishing risk. From an employee perspective our general approach to safety and health should serve us well. Understanding current work hazards and any potential legacy hazards should guide the necessary work practices that protect individuals. These practices may require certain engineering controls such as the use of control zones and specialized equipment and administrative controls including training, use of personal protective equipment and participation in an appropriate medical surveillance program. I encourage people to talk to their managers, industrial hygiene reps, or Medical about any beryllium-related issue.

LN: What are the chances of someone in contact with beryllium being exposed to the disease?
LC: Generally speaking, it appears that about 1 to 6 percent of exposed individuals may develop CBD as a result of an allergic response to even low levels of exposure. This may take years to develop.

LN: Can you statistically explain the chances of a person being affected by beryllium?
LC: One way to think about this is to consider that about 40 percent of individuals may have the genetic marker that has been associated with susceptibility to beryllium sensitivity. If such individuals were to have a history of exposure to beryllium, say at relatively low levels, then about 1 to 6 percent of them would be expected to develop CBD at some point in the future. On the other hand, if these susceptible individuals had past occupations with higher levels of exposures (metal workers, for example) then the disease rate may go as high as 16 percent. The experience at DOE sites has been much lower than this.

LN: What advice do you give employees who have been in contact with or think they may have been exposed to beryllium?
LC: DOE has developed structured programs to address concerns with possible current or past exposures. My recommendation would be to notify the responsible manager, the ES&H representative for the organization, and Health Services. This approach assures a systematic review of the concern from a work assignment, industrial hygiene, and health perspective.



BERYLLIUM is routinely employed in experiments at Sandia's Z machine. (Photo by Randy Montoya)

LN: How many Sandians have been examined?
LC: In the last few years all Sandians, retirees, and other workers associated with Sandia have been invited to participate in beryllium surveillance programs — one for employees managed here at Sandia and the other for former workers that is managed through Oak Ridge Associated Universities on behalf of DOE. To date we have about 45 workers who are defined as "beryllium workers" and an additional 355 "beryllium associated workers." This latter category implies individuals who may have had a past exposure but do not have a current job assignments involving work with beryllium. We are also performing evaluations on individuals associated with the current building investigations.

All in all we have some 508 people who have been evaluated. To date we have two individuals with CBD (one of whom is from Rocky Flats where the diagnosis was made). We also have five individuals who are beryllium sensitive but have not demonstrated signs and symptoms of CBD. All are involved in on-going monitoring programs.

LN: What are some recommendations/ additional comments?
LC: My best advice is that if an individual has a concern about a past or current history of beryllium exposure, then contact Health Services. Anna Miller is our point of contact, and she can be reached by e-mail or phone (845-5411). She will provide information about beryllium screening programs and schedule an examination. This exam is pretty straightforward. It will include a comprehensive history and physical, laboratory tests, a chest X-ray, and a blood test to determine beryllium sensitivity. This latter test is called the Beryllium Lymphocyte Proliferation Test (Be-LPT for short) and is the current best available test to determine if an individual has the allergic sensitivity we have been talking about.

Feedback

Q: *I'm walking down the hall in a building within Tech Area 1 and I hear a cell phone ring behind me. I turn around and notice that an individual has answered the cell phone and is carrying on a conversation. I realize that some individuals are authorized to have a cell phone in the tech areas, but how do I know who is and who isn't authorized. What should I have done?*

A: Thanks very much for your question and your awareness in recognizing that cell phones are a source of many of our security incidents.

If you see an individual using a cellular phone in the limited areas, please feel free to approach and ask to see their Critical Use Authorization Card. Authorized cellular phones used in the Limited Areas are to be accompanied by a Critical Use Authorization Card, issued by Technical Surveillance Countermeasures (formerly part of Electronic Security). This card contains the name of the authorized individual, the date issued, the date the authorization expires, the make and model of the phone, and the phone number. In rare cases, a group name (e.g., Machine Shop, Shift Captain) may show in the name field.

Individuals who have been authorized to use cellular phones in the limited areas are typically familiar with the security requirements and issues with cellular phone use in the limited areas, and should have no problem verifying that they have authorization. If the person you approach refuses to show authorization, or is quarrelsome, report the incident to the Security Incident Management Program at 540-2382. Try to get the name of the individual if you can; also take note of the location and time of the incident.

For more information regarding cellular phones, the URL for the cellular phones website is: http://www-irn.sandia.gov/iss/cell_phone/ index.htm, which also contains links to the CPRs that govern the cellular phones and Technical Surveillance Countermeasures (TSCM) programs.

— Paul Linke (30-1), TSCM Program Manager

* * *

Q: *What is Sandia's policy on who has access to other employees' salary information? A Sandian brought to my attention how much I get paid and they have access to some database containing employees' salary information. I was quite disturbed by this, and would think that nobody except managers should have access to employees' salary information.*

A: Sandia has always considered salary information to be UCI, and access to an employee's salary or other UCI information is limited. Access is limited to an individual's line management and also to a limited number of job functions that require salary data (e.g., Payroll and Benefits).

However, labor is charged to projects in the financial system using a Standard Labor Rate (SLR). Each SLR has a range of base salaries that define the band or salary limits for that SLR. The SLR bands cover all employee salaries at Sandia and are constructed so that the mid-point plus 5 percent equals the upper limit of the band and the mid-point less 5 percent equals the lower limit of the band. (The top and bottom bands have limits greater than 5 percent from the mid-point to help ensure the mid-point is closer to the average for that band.) The mid-points of the bands are then increased by a factor to account for all non-base compensation and then increased by another factor to account for fringe, thus generating the annual SLR. Budgeting project costs is the primary business purpose for the annual SLR rate.

The SLR system does not identify an individual's salary, but a salary range can be identified from knowing an individual's SLR. The business need to be able to budget costs, coupled with the lack of specificity, is what allows us to make SLR information available. However, as with all other assets/information, availability and access are to be used only for legitimate business purposes. Personal curiosity is not a legitimate business purpose. People misusing the SLR or any other corporate asset/information for personal or non-business purposes, or in a fashion to cast Sandia National Laboratories in a negative light, are engaging in inappropriate and unethical behavior and should be reported to management or Sandia's Ethics and Business Conduct Office, Dept. 12810, MS-0353, or the Ethics Hotline at 844-1744. Appropriate disciplinary action will be taken. *— B.J. Jones, Director, Human Resources Center 3500*

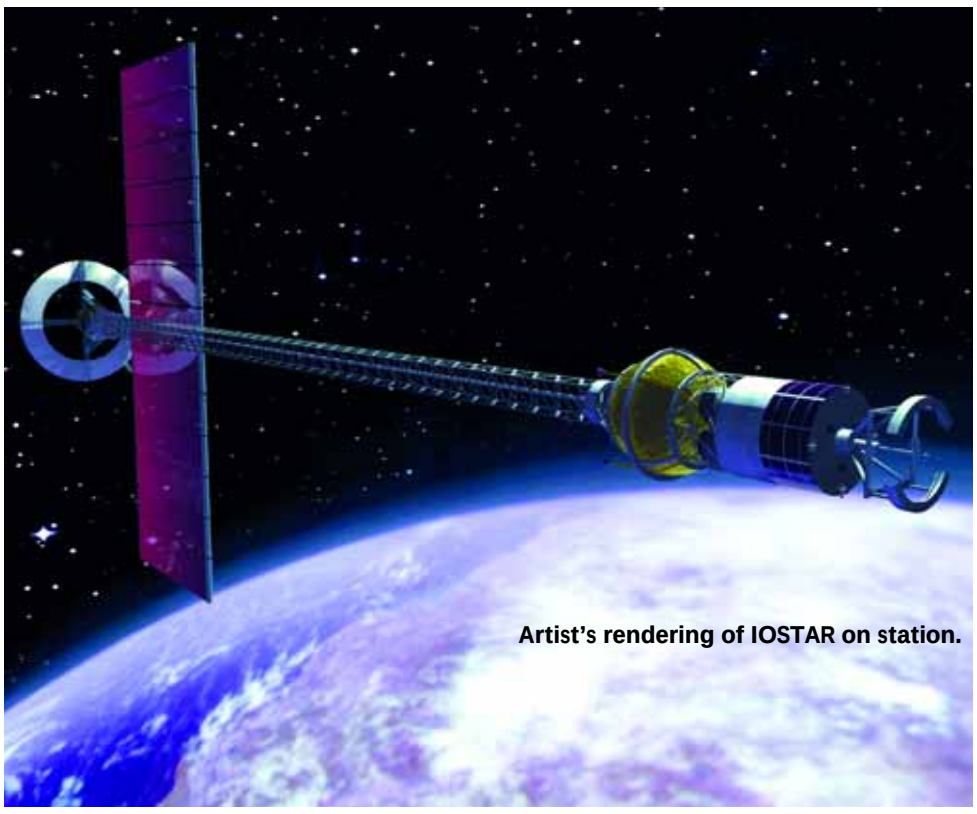
Sandia-designed space reactor could drive in-orbit salvage

Convergence of factors transforms IOSTAR scheme from visionary to viable

By Bill Murphy

Roger Lenard and a group of like-minded scientists and engineers at Sandia — notably, Paul Pickard, Ron Lipinski, and Steve Wright, space nuclear power guys — envision and work for a day when human crews explore the solar system on a grand scale. And they're convinced with a serene certainty that the way to do it — the *only* viable way to do it (and they have the numbers to make their case) — is via nuclear rocketry.

What these persistent and patient researchers at Sandia (along with other initiates around the space exploration community) have needed and wanted is a way to prove to skeptics that space nuclear power is the practical, safe, reliable, and efficient propulsion system that they know it to be.



Artist's rendering of IOSTAR on station.

Proof in the marketplace

They are about to get their proof in that most critical, demanding, unblinkingly pragmatic arena of them all — the marketplace.

Enter IOSTAR.

IOSTAR Corp., a long-time Sandia CRADA partner through its parent company, Intraspace Corp., earlier this month made its business case for a nuclear-powered space tug to investors attending the Technology Ventures Corp. Equity Capital Symposium. The power behind the tug would be based on a Sandia-designed, developed, built, and operated gas-cooled reactor driving an ion engine, using inert xenon gas as the propellant.

IOSTAR — the name is an acronym for **I**n **O**rbit **S**pace **T**ransportation **A**nd **R**ecovery — bases its business model on what it estimates to be a $7-billion-a-year market opportunity. IOSTAR projects that it can capture 10 percent of that market in its first year of operation and 30 percent by the tenth year.

Several years ago, it occurred to Intraspace officials that there could be a large market in the satellite recovery business. Each year, in the commercial arena alone, a certain number of launches fail to put satellites in the correct orbit, making them effectively useless for their intended mission, nothing more than multimillion-dollar space junk.

But *if*, Intraspace reasoned, *if* you could intercept the stranded satellite — usually stuck in a low earth orbit (LEO) rather than the intended geosynchronous orbit (GEO) — and move it efficiently to the correct orbit . . . if you could do that, insurance carriers would pay good money for the service. The market analysis showed that there was indeed a need for the service. It also discerned a healthy market potential in the new launch business — a conventional chemical rocket would boost a satellite to LEO and a more efficient system would tug it to GEO. The market also lay open for a satellite maintenance and upgrade.

So, sure, there was a market. There's a market for gold, too. But you can't make any money if it costs you more to get the gold out of the mountain than you can sell it for on the street.

Enter Sandia.

The story of IOSTAR and Sandia could be a case study for the nexus among entrepreneurialism and technology, vision and engineering, the dreamable and the doable.

Roger Lenard recounts that Intraspace, seeking to make the business case for what was clearly a solid technical concept, came to Sandia asking about using nuclear-powered rocket. A CRADA relationship was established at that time.

In his analysis for Intraspace, which factored in how much an insurance company would be likely to pay for a recovery service, how much mass would need to be moved from LEO to GEO, and how long customers would be willing to wait for their satellites to arrive on station, Roger determined that you'd need a propulsion system with a specific impulse of at least 900 seconds simply to pay for propellant to move the satellite around, given today's launch costs. (See "Specific impulse defined" below.)

A reactor-based system made sense

Subsequent, more detailed analysis of the challenge, Roger says, pointed more and more toward one inevitable conclusion: the technology that made sense — from a technical and business perspective — was a reactor-based nuclear-electric system.

"For a variety of reasons, primarily having to do with risk and cost, we settled on a system that was a direct gas-cooled reactor; it would directly drive a Brayton cycle conversion system, and that would directly drive a set of ion engines operating at about 4,000 seconds of specific impulse."

The numbers were good. Sandia demonstrated to Intraspace's satisfaction that if they were to pursue the space salvage market, nuclear was the way to go; realistically, the only way to go.

Now, with a viable plan in hand and a solid business case, Intraspace needed to raise money. There was a source: a federal loan program that was used to finance the Tracking Data Relay Satellite System. Through four years of effort in Washington, Intraspace helped shepherd legislation through Congress that would provide a $1.5 billion loan for a commercially viable reusable in-space transportation system. In other words, for something that sounds very much like IOSTAR. The legislation was generic — i.e., the loan would be available for such a system; it would be up to Intraspace to demonstrate that its IOSTAR concept met the requirements of the legislation.

(Roger here clarifies the IOSTAR operational model. The reactor-powered system would stay in space and would be replenished with xenon fuel from time to time. Ideally, it would never be idle, but would always be moving stuff around for customers. "You don't want to make them [the IOSTAR tugs] wait between jobs in a parking orbit," he says. "You want to follow the Southwest Airlines model: the planes don't make any money unless they're in the air — with passengers in them.")

A rigorous process

It turns out, Roger says, that the federal loan for IOSTAR is available, but the company needs about $15 million to complete a very rigorous, very detailed loan application that requires "an awful lot of knowledge about the system in terms of cost, schedules, risks, market assessments, payback, salvage value — just a wide variety of things."

Timing happened to be good for the IOSTAR project: legislation just passed in the State of New Mexico allowed direct state investment in businesses with potential long-term beneficial impact on the state's economy. And the state, under Gov. Bill Richardson's leadership, has seen the private space business as a growth opportunity for New Mexico. In the meantime, Technology Ventures Corporation got wind of IOSTAR and recognized in it a great potential that perfectly fit the TVC profile.

"TVC decided this was a great project," Roger says. "It transferred Sandia-developed technology — namely, the gas-cooled reactor; the integrated Brayton cycle, all the models we developed, our shielding, our test facilities, as well as our direct operator capability (for technical and legal reasons, Sandia and DOE would own and operate the actual reactor operation in the IOSTAR model) — to a commercial venture that satisfied a wide, wide range of commercial, military, and, eventually, NASA missions."

TVC, Roger says, took on Intraspace/IOSTAR as a client, and spent several months working with them, helping them revise some aspects of their financial model to make the enterprise more attractive to the investor community.

And that brought IOSTAR to the Equity Capital Symposium early this month.

If IOSTAR, through its TVC symposium exposure or otherwise, finds its angel (and the state may very well be a partner in any equity investment), Roger says, "it looks like the project could be launched in somewhere between four-and-a-half and five years, everything going according to plan. There are always hiccups here and there, but that looks like a schedule that could be met."

Epistemologically proper thing

Roger welcomes Sandia's involvement in IOSTAR as an opportunity to prove the concept he and his colleagues have been working toward.

"Look," he says, "first off, we ought to be doing it because it's the right thing to do. You can only do so much exploration with 300 watts of power, solar cells, and 450 seconds of specific impulse. So if you ever want to operate within the solar system cost-effectively and with regularity, you're going to have to have nuclear power systems. So there is the motivation in the fact that this is the epistemologically proper thing to do. Now having said that, the IOSTAR people aren't the only ones who have seen the light. NASA has its Prometheus program, which is looking at nuclear electric propulsion and expansions to the radioisotope program and may, the rumor mill has it, *may* be looking at nuclear thermal-based systems again.

"You know, it seems to me that the important point is that there is a convergence of the fact that there are commercially viable missions and a technological capability here. The time is right.

"All of this is in its infancy and can still founder again, but to the extent that Sandia can bring its technical forces to bear safely in an expedient fashion it seems to me we'll do that."

Specific impulse defined

Specific impulse (commonly abbreviated I_{sp}) is the impulse (change in momentum) per unit mass for rocket fuels. In other words, the specific impulse is a measure of how much push can be obtained from a fixed mass of fuel. A rocket must carry all its fuel with it, so the mass of the unburned fuel must be accelerated along with the rocket itself. Thus, minimizing the mass of fuel required to achieve a given push is crucial to building effective rockets. Using Newton's Third Law it is not difficult to verify that for a fixed mass of fuel, the total change in velocity (in fact, momentum) it can accomplish can be increased only by increasing the exhaust velocity.

It follows that the faster the speed at which propellant is thrown out the back of the rocket, the faster the rocket can travel or the more cargo it can carry. The specific impulse of a rocket propellant is a measure of how fast the propellant is ejected out of the back of the rocket. A rocket with a high specific impulse doesn't need as much fuel as a rocket with low specific impulse to reach a given velocity.

— From Wikipedia, the online open source encyclopedia

Sandia, University of Colorado-Colorado Springs to collaborate on MEMS, nano, and software projects

By Michael Padilla

Sandia and the University of Colorado at Colorado Springs have entered into a memorandum of understanding (MOU) as a basis for future technical collaborations at the Colorado Springs campus.

The MOU encourages cooperative efforts between Sandia and CU-Colorado Springs in a broad range of technology areas including microelectronics, MEMS (microelectromechanical systems), nanotechnology, and software for numerous space and security applications. The agreement also emphasizes advanced manufacturing technology, recognizing the need for US industry to remain competitive in the global economy.

CU-Colorado Springs recently established the Rocky Mountain Technology Alliance (RMTA), an organization of industry, government, and university leaders seeking to establish a technology-rich business development environment in Colorado Springs and the surrounding region. The agreement stems from a relationship between RMTA and Sandia's Regional Alliance for Manufacturing Program (RAMP).

SANDIA VP Lenny Martinez and CU-Colorado Springs Chancellor Pamela Shockley-Zalabak sign MOU.

RAMP is a strategic Sandia manufacturing initiative led by Sandia's Manufacturing Systems Science and Technology Division. One of RAMP's objectives is to establish regional partnerships with universities, industry, and government to engage in manufacturing R&D, exercise Sandia's capabilities through technical assistance projects, and help to develop and improve the high-tech manufacturing capabilities of current and potential partners.

Leaders at CU-Colorado Springs and Sandia believe they have mutual interests and capabilities in areas that can be combined to meet the high-tech manufacturing objectives at Sandia, RMTA, and CU-Colorado Springs. Areas of interest include microsystems and nanotechnologies, space systems and engineering, cybersecurity, computer and communication networks, power and energy systems, and advanced manufacturing.

Lenny Martinez, VP for Manufacturing Systems, Science & Technology (14000), says there are a number of potential areas for collaboration between the two organizations.

"One that we are particularly interested in at Sandia is providing technical assistance to commercial high-tech manufacturing firms in Colorado Springs and other communities throughout the state of Colorado in support of our regional manufacturing strategies as identified by RAMP," Lenny says. "These types of assistance projects are of growing importance to Sandia in terms of our needs for partnerships and manufacturing supply chain development."

Jeremy Haefner, Dean of Engineering and Applied Sciences and Director of the Colorado Institute of Technology Transfer and Implementation at CU-Colorado Springs, says the future of the University and the economic future of the Colorado Springs region are mutually dependent on technology — specifically technology that can be developed and commercialized here in the region as opposed to in other US cities or abroad.

"We are citizens of the Rocky Mountain Technology Corridor — the region stretching from northern Colorado to southern New Mexico — from which much of modern technology flows," Haefner says. "We will expand our applied research in the region through CU-Colorado Springs and in cooperation with our partners, which will lead to substantially increased technology commercialization and production."

CU-Colorado Springs is the fastest growing university in Colorado and one of the fastest growing universities in the nation. The university offers 25 bachelor's, 17 master's, and two doctoral degrees. The campus enrolls more than 7,600 students annually.

BIOLOGY TOUR — Lisa Villalobos-Menuey, professional research assistant, gives Sandia VP Lenny Martinez a tour of the University of Colorado at Colorado Springs Institute of Bioenergetics.

Labs' small business contracts should count in DOE's favor

Executive VP Joan Woodard says in Senate testimony that new guidelines don't boost small business involvement

Editor's note: Federal law sets a goal for small businesses to participate in 23 percent of the total value of all federal prime contracts. In 2000, the guidelines changed to exclude contracts between small businesses and Management and Operating (M&O) contractors (like Sandia) from counting toward small business participation. This new policy has radically distorted DOE's and Sandia's record on small business participation. On May 18, Executive VP Joan Woodard testified before the Senate Committee on Energy and Water Resources regarding the policy change and the possible implications for Sandia and its small business partners. Here are excerpts from her 2,800-word testimony:

JOAN WOODARD

In fiscal year 2003 we [Sandia] awarded $459 million to small businesses in 94,000 procurement actions — 53 percent of our total commitments of $866 million. . . . By excluding Sandia's excellent small business results (and those of other M&O contractors), DOE's true small business performance is grossly understated. . . .

In 1999, prior to the policy change, DOE met its Small Business Administration (SBA) goal of 16.7 percent with 18 percent small-business participation. In 2000, when the change was implemented, the figure dropped to around 3 percent. Although SBA adjusted DOE's goal downward to 5 percent, DOE is now well short of its target. And it is now in the unfair position of having to meet a goal that is based on a percentage of the total value of its prime contracts without being able to include the small business portion of all its prime contracts. . . .

The new policy has the potential to weaken or even destroy the Government-Owned, Contractor-Operated (GOCO) contracting model that has been used by DOE and its predecessors for more than 50 years. There is no mathematically possible way for DOE to meet the 23 percent target of [the policy] without breaking the facility M&O contracts into smaller pieces.

There is major flaw in the . . . plan that falls into the "emperor's new clothes" category: It is likely to be a zero-sum game.

There is a major flaw in the . . . plan that falls into the "emperor's new clothes" category: It is likely to be a zero-sum game. When DOE awards a small-business contract that previously would have been awarded to a small business anyway (by the M&O contractor), there is no net gain for small businesses. . . .

. . . Indeed, local and regional small businesses may actually lose contracts because federal agencies are required to conduct competitions on a nationwide scale. . . .

Recommendations

How to resolve these concerns is primarily a question for Congress to decide; I offer the following recommendations for consideration.

• The National Laboratories Improvement Council (NLIC) urged reinstatement of the earlier . . . policy that allowed M&O contractors' small business subcontracts to count toward the Department's goal. We regard this recommendation as the preferred solution. . . .

• DOE and its M&O contractors should continue to work together to increase small business participation at all levels of contracting through small business development and outreach programs deployed throughout all Department elements. . . .

Mr. Chairman, this concludes my statement.

Sandia helps 296 businesses in 2003 through New Mexico Small Business Assistance Program

By Michael Padilla

Sandia completed its third year of providing technical assistance to New Mexico small businesses last year through a tax credit passed by the New Mexico Legislature.

Nearly 300 small businesses were assisted throughout New Mexico in 2003. The assistance ranged from helping a company make better spark plugs to assisting in the automation of the New Mexico chile industry.

Sandia recently celebrated the success of the 2003 program at a reception at the Albuquerque Museum where small-business representatives and Sandia principal investigators involved in the assistance projects attended.

The New Mexico Small Business Assistance (NMSBA) program allows Sandia to use a portion of its gross receipts taxes paid each year to provide technical advice and assistance to New Mexico small businesses. During 2003, Sandia received $1,796,000 in tax credits, 77 percent of which went to small businesses in rural New Mexico and 23 percent to small businesses in Bernalillo County.

There are few requirements for small-business participation — mainly that assisted companies be for-profit New Mexico small businesses and that the help isn't available for a reasonable cost through private sources. Nine success stories from the 2003 NMSBA program year were highlighted at the event. They are:

Beer Engineering performs research and development in system engineering, complex robotics, automation systems, networks, and software development. **Applied Thermal Systems** designs and manufactures thermal equipment. Sandia's assistance has provided the two companies an opportunity to gain experience with the capabilities and limitations of commercially available robots through work on a pick-and-place robotic work cell project.

Enterpulse, Inc. is a research and development company in pulsed power specializing in automotive ignition, specifically spark plugs. Sandia assisted in the development of a new spark plug that has the potential to be 10,000 times more powerful than current spark plugs. This assistance allowed Enerpulse to overcome a major hurdle in development and expedited the fabrication process.

Fast Ditch™ in Vallecito, N.M., is in the commercialization stage of producing a unique corrugated plastic liner for earthen ditches to eliminate the loss of water that occurs with unlined ditches.

JOHNNINA ORTEGA of Supplier Information & Relations Dept. 10205 (right), Doug Jennings, and Patricia Salgado (both 10254) examine literature from a Sandia vendor. The three were instrumental in putting together the annual Vendor Fair, which offers Sandia suppliers a chance to showcase their wares. (Photo by Randy Montoya)

From burn testing provided by Sandia, new liners will be designed to minimize the ditch surface area that is exposed to weed burning.

Last Chance Water Company in Otero County is a water management company representing land owners of the Salt Basin that manages water resources and establishes the water supply available to potential markets. Sandia is assisting LCW in the identification, quantification, and characterization of a new and renewable water source in New Mexico. Sandia has also been able to dynamically enhance software platforms.

New Mexico Chile Taskforce in southern New Mexico is a partnership of chile growers, producers, and researchers created to apply science and technology to improving productivity and ultimately enhancing New Mexico's competitiveness in a global market. Sandia has worked with a number of other engineering organizations to integrate a systems approach to chile cleaning and destemming.

Nickel Brand Software in Moriarty helps bridge the gap between historical (hot iron branding) and current animal identification methods. Working with the Space Alliance Technology Outreach Program, Sandia is researching a dual confirmation system for animal tracking and image recognition. The software will be compatible with tablet PC's and PDA's, providing for ease-of-use in the field.

Owens Office Box in Farmington has developed a specialized filing cabinet for use in semi tractor trailers. Sandia consulted with Owen Bradley to design a pull-out drawer that opens for filing and fits underneath the passenger seat. The revenue stream for this product is estimated to be $18-20 million per year.

PEMCO in Farmington is one of only five companies in the United States that provides repair and refurbishment services for well drilling and servicing structures. The assistance has been crucial in bringing PEMCO into today's competitive environment for manufacturing in accordance with current industry standards and requirements. That translates to about $150,000 in annual cost savings.

STAR Cryoelectronics in Santa Fe develops, manufactures, and markets ultra-sensitive Superconducting Quantum Interference Device (SQUID) sensors and advanced PC-based SQUID control electronics products worldwide. With Sandia's assistance the company was able to modify the process and eliminate defects that were causing their devices to fail.

Tech Partnerships group modifies conflict of interest policy

Modifications that clarify requirements and guidance to avoid conflicts of interest related to tech transfer activities have been made by Sandia's Technology Commercialization and Partnerships.

The areas affected by this change range from licensing intellectual property and Sandia's Entrepreneurial Separation (ESTT) program to scientific/technical outside employment and referral of commercialization opportunities to the Partnership Centers 1300 and 8529.

"As a government-owned national security laboratory we have obligations and responsibilities that don't have parallels in the private sector, and Congress and the public hold us to higher standards of propriety," says Steve Grieco (1303), Technology Transfer manager.

He says that this includes, among others, noncompetition with the private sector, fairness of opportunity, and access to unique facilities and capabilities.

Evolving from strictly government-funded CRADAs in the early 90s, Tech Transfer at Sandia now includes industry-funded CRADAs, a well-established licensing program, a high-volume Work for Others program, a multifaceted small business program, the Science & Technology Park, and the ESTT program, which allows engineers and scientists to start a business using technology developed at Sandia.

Points of the policy

"Over the years, we've come to recognize the situations and business propositions that have the potential to draw criticism and jeopardize our reputation as performing exceptional service with the highest ethical standards," Steve says. The recent review and revision of the business rules is a step to apply Sandia's 10 years of experience managing a vigorous tech transfer program and to help sensitize the broader population to the issues and clarify the corporation's expectations of its employees.

Technical staff (and all employees) are expected to accord Sandia their primary professional loyalty and full-time employment. When an employee divides his or her loyalties between multiple employers in the same field, a conflict of interest or appearance of a conflict of interest almost always arises.

High-level approval has long been required for outside employment of a technical nature, such as scientific and technical consulting. This requirement has not been universally understood. The process requirements were clarified to ensure that such cases are reviewed at the proper management level to determine whether the risks of such an outside activity can be sufficiently mitigated to best protect Sandia's interests.

As more cases are reviewed, subject matter experts will gain experience and the corporate risk tolerance will become better known. This will increase the quality and consistency of advice in these matters.

"Sandia is enthusiastically supportive of commercialization of government-developed technologies and has set up a suite of contractual vehicles and procedures to accomplish its objectives," Steve says. "To perform responsibly with consideration of the aforementioned concerns (fairness of opportunity, etc.), such endeavors must be performed at arm's length by independent parties. Tech transfer is to be carried out using the contracts and procedures designed for that purpose rather than as ad hoc activities performed by Sandia employees acting independently."

Disclosure requirements

In accordance with Sandia's prime contract, employees must disclose all scientific, technical, or entrepreneurial consultant work or other comparable employment services which the employee proposes to undertake for others and, in turn, Sandia must transmit such disclosures to the DOE Contracting Officer.

"Sandia remains firmly committed to the vision and objectives of the 1989 National Competitiveness Technology Transfer Act," says Steve.

For detailed information check out: CPR 001.2.3, CPR 200.3.2, and CPR 200.3.5.

—Michael Padilla

Paul Robinson receives Heart of Diversity Award; Don Blanton, VP 3000 also honored

Sandia President C. Paul Robinson was presented with the Heart of Diversity President's Award, which was established in his honor, at Sandia's 3rd Annual Corporate Diversity Team/Division Council Forum. It was presented May 13 by the Diversity Leadership Program (3533) and the Corporate Diversity Team, which includes representatives from divisions across Sandia.

According to Rochelle Lari (3553), the award was established in honor of Paul, who has whole-heartedly accepted ownership and accountability for diversity leadership at Sandia and demonstrated commitment, leadership, and active support in creating a diverse workforce and inclusive culture leading to high performance.

A special video presentation capturing Paul's numerous communications to Sandians and work associates on diversity and inclusion was also presented at the forum.

Paul then presented Don Blanton, VP 3000, with the Heart of Diversity President's Award. Don was cited for leading the charge for Diversity Leadership at Sandia by demonstrating great commitment to the people of Sandia through his passionate ownership of the People Strategic Objective and by his work with the Sandia, local, and national communities.

Of the award, Paul said, "It has been said to handle yourself you must use your head, but to interact with other human beings you must begin with your heart. This is really the essence of how we should look at ourselves here at Sandia. . . . When we look at other individuals around us that make up this wonderful fabric of Sandians, we should recognize the strength that comes from seeing the world through someone else's eyes, realizing the great miracle within the lives of each of those people, which blended with your own lives, makes the contribution for which Sandia has become."

Future plans are to give out a Heart of Diversity President's Award on an annual basis at future Annual Diversity Forums. — *Iris Aboytes*

SANDIA PRESIDENT Paul Robinson displays the Heart of Diversity President's Award.

". . . to handle yourself you must use your head, but to interact with other human beings you must begin with your heart. This is really the essence of how we should look at ourselves here at Sandia."

National Atomic Museum hosts Asian Pacific Islander American Heritage Day

ASIAN PACIFIC ISLANDER DAY — The Albuquerque Chinese chorus performs during Asian Pacific Islander American Heritage Day at the National Atomic Museum. Observing is Tom Salazar (12660), a member of the museum staff.

In partnership with the Sandia Asian Leadership Outreach Committee, the National Atomic Museum hosted the annual Asian Pacific Islander American Heritage Day activities May 15. Kicking off the event were Albuquerque Mayor Martin Chavez, Sandia VP 5000 Al Romig, and Museum Director Jim Walther.

Guests were treated to a spectacular Dragon Dance presented by the Van Hanh Buddhist Youth Association. Other performers included the Chinese Choir, Near East Dance, Japanese Dancers, East Indian Dancers, Filipino Folk Dance, Polynesian Dancers, and a martial arts demonstration by the Chinese Cultural Center.

Ping Chen (8773) gave a presentation in the theater about Chinese medicine. This was followed by a presentation on the art of floral arranging by members of the Ikebana International Chapter 41. The New Mexico Chinese School of Language and Arts hosted several hands-on activities such as brush painting and calligraphy in the museum classroom. A private art exhibit of Japanese porcelain items was on display.

Along with Sandia's Asian Leadership Outreach Committee and the museum, other sponsors included Ta Lin Supermarket, Pei Wei Asian Diner, and P. F. Chang's China Bistro. They provided food samples that were enjoyed by all.

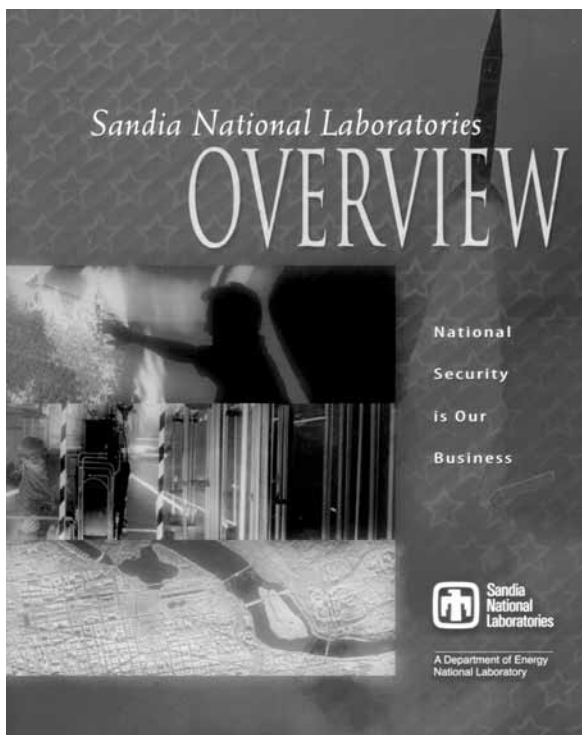
Asian Pacific Islander American Heritage Day is one of a series of diversity events sponsored by the National Atomic Museum. Others include Native American Heritage in November and Hispanic Heritage Month in September.

MEMBERS of the Pacific Islander Day Planning Committee.

Special Events Manager Phyllis Padilla Owens thanks the members of the planning committee, the Asian American Association of New Mexico, members of the Sandia Asian Leadership Outreach Committee, and the museum volunteers and staff who made this event possible.

Members of the Asian Pacific Islander Day Planning committee were Frank Hung (1748), Meifan Chen (5524), Juanita Sanchez (12660), Jean Tower, museum volunteer, and Phyllis Padilla Owens (12660), program chair.

New Sandia Overview booklet available



A new Sandia Overview booklet is now available for distribution to Labs visitors, customers, and others interested in Sandia's work.

The 20-page, 8-1/2 by 11-inch publication is illustrated with recent color photographs and emphasizes the Labs' national security missions. It explains Sandia's five primary research areas and highlights many significant historical accomplishments and commercialized technologies.

It also explains how we partner with industry, universities, and other government agencies to accomplish our missions and contains a complete list of user facilities that we share with partners. The booklet also discusses Sandia's people, work locations, budget, and community involvement activities.

Limited quantities are available for official use at no cost from the Media Relations and Communications Dept. at Sandia/New Mexico (call 844-4902) and from the Sandia/California Public Relations Office in Bldg. 911, room 109.

The Overview booklet is also available on Sandia's External Web at www.sandia.gov/news-center/publications/corp-info/Overview.pdf.

Management promotions

New Mexico

Anthony Medina from Level II Manager, Advanced Systems Dept. 5720, to Director, Monitoring Systems and Technology Center 5700.

Anthony joined Sandia in May 1979 as an undergraduate work-study program member. After completing his bachelor's degree in May 1983, he participated in Sandia's OYOC program, completing his master's degree in June 1984 and becoming a full-time staff member. He worked in the Electronics Systems Center as a design engineer on electronic design of firing systems for W88, ASW/SOW, and conventional weapon systems. He also performed project management on the Missile Defense Agency Lightweight Instrumentation System (LWIS).


ANTHONY MEDINA

Anthony became a Level I Manager in April 1991, managing departments responsible for optics, electronics, and sensors for satellite systems. These departments were responsible for sensor payloads such as the Multispectral Thermal Imager satellite's optical and IR payload, AURA ultraviolet sensor system, GPS optical nuclear detonation detection sensor, and EnRad, the next-generation enhanced nuclear detonation detection sensor.

In January 2001, Anthony was promoted to Level II Manager in Monitoring Systems and Technology Center 5700, where he acquired experience as a program manager in IWFO, WFO, and NNSA/NA-22 R&D satellite sensor system programs.

He has a BS in electrical engineering from New Mexico State University and an MS in electrical engineering with a specialty in electronics/IC design from Stanford University.

* * *

Carmen Allen from PMTS, Security Technology Dept. 4138, to Manager, Instrumentation and Systems Verification Dept. 2661.

Carmen came to Sandia in June 1988 as a member of the Computer Consulting Department, specializing in UNIX and C. In 1990, she transferred to the Satellite Testers and Experimental Ground Stations Department, where she worked on the development of the Payload Equipment Tester and the Multispectral Thermal Imager Tester/ground station.


CARMEN ALLEN

In March 1997, Carmen took a temporary assignment with the CIA, working in the Advanced Analytic Tools Division under the guidance of the Directorate of Intelligence and the Directorate of Science and Technology.

She returned to Sandia in October 1998 and joined the Security Systems and Technology Center, working in transportation safeguards and security technology. Most recently, Carmen led the development of several vulnerability analysis projects, including the Adversary Time-Line Analysis System (ATLAS).

Before joining the Labs, Carmen worked for AT&T Technologies.

She has a BS in mathematics, an MS in computer science, and an MBA in management, all from the University of New Mexico.

* * *

Doug Nordquist from Manager, Microsystems Program Integration Dept. 1701, to Level II Manager, Ethics Office Dept. 12810.

Doug joined Sandia in July 1990. He has held various positions over his 14-year career, most recently as the Microsystems Program Integration Office Manager in the Microsystems Science, Technology and Components Center. Previous assignments include: Business Office Manager for the Monitoring Systems and Technology Center, Business System Task Leader for the Energy & Environment Sector, and Financial Analyst in the Facilities, Operations & Maintenance Center.


DOUG NORDQUIST

Before coming to the Labs, Doug was a tax accountant at two international accounting firms. He has also taught accounting courses at New Mexico State University and the University of Phoenix.

Doug is a Certified Public Accountant and received a Master's of Accountancy and bachelor's degrees in accounting and economics from New Mexico State University.

* * *

Jerry Simmons from Manager, Semiconductor Material and Device Sciences Dept. 1123, to Level II Manager, Nanostructure and Device Sciences Dept. 1120.

Jerry joined Sandia as a Senior Member of Technical Staff in 1990. His technical interests are in the integer and fractional quantum Hall effects, low-temperature electronic transport, nanoelectronics and quantum electronics, detectors and emitters in the terahertz frequency range, solid state lighting, gallium nitride-based semiconductors, and the development of high-brightness LEDs and vertical cavity surface emitting lasers (VCSELs) in the green to the deep UV (250 nm).


JERRY SIMMONS

Jerry has been manager of Semiconductor Material & Device Sciences Dept. 1123 since May 2000. He is the program manager for the LDRD Solid State Lighting Grand Challenge, a DARPA project on deep UV LEDs for chem-bio detection, a Joint LANL/Sandia Nanoscience LDRD project on Active Photonic Nanostructures, a DOE/Basic Energy Sciences project on Interacting Nanoelectronic and Nanophotonic Nanostructures, and several internal LDRDs on semiconductor physics.

He received an *Industry Week* Technology of the Year Award (1998) for his development of a quantum tunneling transistor and was appointed a Fellow of the American Physical Society in 2002.

Jerry has a BA in philosophy and a BA in physics, both from New College in Florida. He worked as a technician at Bell Laboratories, Murray Hill, from 1982 to 1984 and then entered graduate school at Princeton University, where he received a PhD in electrical engineering.

California

Susanna Gordon from PMTS, Systems Research Dept. 8112, to Manager, Systems Studies Dept. 8114.

Until her recent promotion, Susanna had been a member of Systems Research Dept. 8112 since joining Sandia/California in September 1993.


SUSANNA GORDON

Her early work involved analysis of energy usage on the Bay Area Rapid Transit (BART) system, which led to further work under a BART CRADA to develop energy-saving train control strategies. She also provided analysis of stand-off laser chemical detection systems.

Since 1997, Susanna has been working in the area of chemical and biological facility protection, initially as Sandia's technical lead on the PROTECT program, which focused on protection of subways from chemical attacks such as the 1995 Aum Shinrikyo attack in Tokyo. Since 2001, she has led the PROACT program, which is collaborating with San Francisco International Airport to investigate issues and test technologies for chemical and biological defense of airport facilities.

Susanna has a BS in applied and engineering physics from Cornell and an MS and PhD in physics from the University of California-Berkeley.

Forklift drivers hone skills, safety awareness in annual rodeo

REGINA JARAMILLO, a member of the Manufacturing Materials Logistics team, shows off her driving ability in the annual Forklift Safety Rodeo. She was one of 60 participants in the event. The grand prize winner (for the second time) was Chris Mehring of Fleet Services Team 10265. Second-place runner up and top female operator was Maxine Baca of Materials Movement Dept. 10263. The event is in its fourth year and continues to draw more and more participants outside of the Logistics organization. There were participants from 10200, 10800, 14409, 4151 and even a member from the California site logistics office. After several days of competitions and elimination rounds, the event culminated with an awards ceremony and safety team celebration BBQ attended by 300 employees. The project leads for the event are Liz Carson (10262), Ernest Sanchez (3122), Willie Johns (3122), and Danny Donald (3122).

(Photo by Randy Montoya)

1970s

Concerns about the environment, the energy crisis, and concerted criticism of U.S. defense policies arising from national concerns about the war in Vietnam combined in the early 1970s to reposition the management of the nuclear weapons programs within the U.S. government. With the Energy Reorganization Act of 1974, the Atomic Energy Commission was dissolved and its responsibilities absorbed within two new agencies. The Nuclear Regulatory Commission was created to regulate the nuclear power industry, while the Energy Research and Development Administration (ERDA) was assigned the nuclear weapon, naval reactor, and energy development programs. In 1977, ERDA was replaced by the cabinet-level Department of Energy (DOE). While the weapon programs continued intact at Sandia, the lab underwent a reduction in staff size as a result of budget cuts. New programs were introduced to support national energy research, while terrorism at the 1972 Olympics in Munich turned attention to programs advancing physical security research and practices.

Anti-terrorism: One of the research areas pursued to protect facilities from terrorist incursion was physical security. The 1977 safeguards exercises at Sandia included testing new type barriers devised to keep intruders out.

Vertical-axis Wind Turbine: The experimental vertical-axis wind turbine built at Bushland, Texas, was the culmination of Sandia's initial research into wind turbines as a possible alternative energy technology. Wind and solar energy programs were launched at Sandia in the 1970s in response to the nation's energy crisis.

This page is a reproduction of the fourth in a series of new posters highlighting Sandia's decade-by-decade history since its origins in the mid-1940s. The posters, mounted on heavy glass for permanent display in the hallway outside the Labs' executive suite in Bldg. 802, were produced by Mike Clough (project lead), Jerry Gorman (graphic designer), Myra O'Canna (archival images), and Rebecca Ullrich (writer). Another set of the posters is now on display in the corridor linking Bldg. 800 and Bldg. 802.

Mileposts

New Mexico photos by Michelle Fleming

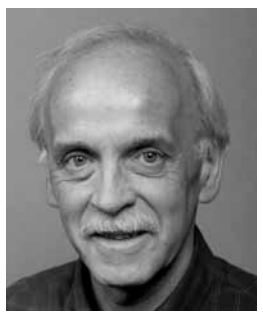

Steven Richards
35 2662


Thomas Snowden
35 5924


Ivory Alexander
30 1904


Wilma Dansby
30 10267


Michael Hall
30 2111


Michael Hosking
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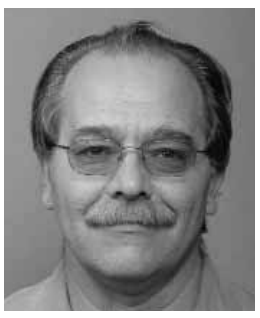
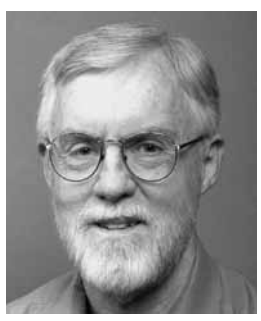
Richard Sanderville
30 12610


Walter Simpson
30 1673


Ronald Van Theemsche
30 2997


Oscar Hernandez
25 2955


Kurt Lanes
25 5720


Scott Mills
25 6141


Ronald Moya
25 4100


William Oberkampf
25 9133


Gordon Groves
20 2616


Clint Hall
20 1646


Lloyd Irwin
20 14403


Joseph Kotulski
20 1642


Margaret Murray
20 2342

James Murray
20 1735


Steve Ratheal
20 4153


David Schultz
20 2331


Pam Catanach
15 12650


Joseph Cesarano
15 1843


Tracy Jones
15 10756


Randy Lober
15 9141

Recent Retirees


Patty Trellue
28 2900


Gerry Mitchell
27 2952


Donald Larrichio
20 10257


Julie Walker
19 7000


Glenn Russell
25 2662


Mark Dowdican
20 2338


Paul Marquez
20 10263


William Mertens
20 9618


Joseph Sidlauskas
20 14133


Debra Browitt
15 14407


Lewis Marlman
15 3124


Larry Olson
15 6222

SOLAR TOUR — Tom Mancini, left, of Sandia's Solar Technologies Dept. 6218 gives a tour of the Labs' solar tower in April to people attending the North American Energy Summit. The visitors got to see Sandia's solar thermal power tower and Stirling dish technologies. The North American Energy Summit was organized by the Western Governors' Association. (Photo by Randy Montoya)

Editor's note: We "reintroduce" in this issue this monthly column that last ran in the Lab News *in the early 1990s. It features Sandia news from 50, 40, 30, 20, and 10 years ago, but every column will not necessarily include items from each decade.*

50 years ago . . . The Coronado Club Pool opened for the season on May 29. Season tickets were $2.75 for members; monthly passes were available for $1.10, 55 cents for children. . . . Sandia's new mobile laboratory units for nuclear weapon field testing, primarily in Nevada, were featured. For unexplained reasons, the development program was dubbed "Project Outcast." Then Sandia Field Testing Director Glenn Fowler said the total cost ran into "thousands of dollars," but it was no longer necessary to ship tons and tons of packaged equipment to remote sites, unpack, assemble and test, and then reverse the operation and take the tons and tons back home. . . . Ray Powell, Jr., became Superintendent of Personnel and Public Relations for Sandia Corporation. He went on to become one of Sandia's longest-serving vice presidents, 1959-1985.

40 years ago . . . Sandia's Purchasing Organization placed a new computer program in operation that reduced the time for placement of purchase orders from an average of 16 days to 24 hours or less, with accompanying reductions in manual and clerical effort. . . . The Navy presented a special POLARIS Team Flag to Sandia's Livermore Lab. A letter from Rear Admiral I. J. Galantin accompanying the flag noted Sandia's support in providing the US "with the finest weapon system in the world today."

30 years ago ... A Feedback question about possibly establishing non-smoking work areas was answered by then Sandia medical doctor S. P. Bliss partially this way: "Although there have been articles in the lay press suggesting that the smoke from others is deterimental [sic] to non-smokers, up to the present time no scientific studies have confirmed this. Until there is such proof, the Laboratories is unwilling to legislate against smoking." . . . The *Lab News* featured a new vertical axis wind turbine that was fabricated at Sandia and then mounted on the roof of Bldg. 802. The objective was to demonstrate that it could be built cheaper than conventional horizontal axis systems. A series of tests was planned. It was described as looking like a giant upside-down eggbeater.

Lab News Reader Service information

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

Retirees (only):

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

Others:

To receive the *Lab News* or to change the address (except retirees), contact Michelle Fleming, Media Relations and Communications Dept. 12640, at telephone 505-844-4902, e-mail meflemi@sandia.gov, or Mail Stop 0165, Sandia National Laboratories, Albuquerque, NM 87185-0165.

Employees:

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

Feedback

Q: *Do Sandia managers have the authority to monitor internal postings their employees are bidding on? If so, are they then allowed to provide unsolicited input to the hiring manager?*

A: No, managers in general do not have access to monitor internal postings on which their employees have bid. They only have access to bidders on internal jobs they have posted for their own department. There are, however, a very limited number of Sandia managers who have access to all bidding information for business reasons. This list includes the Human Resources managers, the HR attorneys, the Ombuds, and the Ethics office. All employees have the authority to provide input to managers; sometimes this input is solicited and sometimes it is not. *— B.J. Jones (3500)*

* * *

Q: *Like many Sandians, I use a commercial software package (TurboTax) to prepare my Federal and State income tax returns. In recent years, they have introduced a feature that allows users to download financial information from participating banks, mutual funds, etc. (1099-INT, 1099-DIV, 1099-B forms) and employers (W-2 forms) from the Web, and import that information directly into their return. Individual passwords and secure encryption are used to assure privacy.*

This not only saves time, it also reduces the chance for errors, as the data is automatically entered in the appropriate place on every form where it is needed. Of course, the user may still edit any data he/she feels is in error. Unfortunately, Sandia Corporation is not one of the participating employers. Can you tell me if Sandia has any plans to participate, and if so, how soon it might materialize?

A: Payroll is currently looking at the feasibility of implementing "Web-based" W-2s for Sandia employees. Employees would be able to download their W-2s directly from the web rather than waiting for the Postal Service to deliver them. In addition, the project would include the availability of Sandia employee W-2 information downloads to tax preparation software. We are in the early stages of evaluating this project but we would like to implement it for the 2004 tax reporting calendar year. Please feel free to check with me during the early summer for an update. *— Jesus D. Ontiveros (10502)*