Sandia/LANL researchers quietly aided DHS in 2007 Minneapolis bridge disaster

CARS REST on the collapsed portion of the I-35W Mississippi River bridge in Minneapolis, Minn. The photo was taken four days after the Aug. 1, 2007, collapse that claimed 13 lives. (Photo by Kevin Rofidal, US Coast Guard via Wikimedia Commons)

By Neal Singer

When catastrophe occurs, government decision makers need immediate information on the scope of damage to determine the proper remedies.

After the Minneapolis bridge disaster of Aug. 1, 2007, damage mitigation decisions were made easier for the Department of Homeland Security by the work of NISAC — the National Infrastructure Simulation and Analysis Center.

NISAC researchers from Sandia and Los Alamos national labs provided information within a day to help DHS decision makers put in perspective the economic and security consequences of the tragic event.

"NISAC staff creates computer models and perform analyses using data from public and other sources," says NISAC technical lead Theresa Brown (6321). "In this case, we used publicly available data on traffic flows and commodity transport in the area of the collapsed bridge."

While studies from NISAC are provided to some policy makers on a regular basis, others studies — like the one on the failed bridge — are tied to the immediate impacts of a one-time event.

The NISAC study found that disruptions to key societal components were likely to be minimal. These included emergency transport to hospitals, food and oil flow, and educational sites.

NISAC is composed of approximately 90 scientists, who participate on a part-time basis from Sandia and Los Alamos national laboratories and from DHS.

NISAC studies are distributed through the National Incident Command Center to response and recovery groups.

US Department of Labor, Sandia agree on terms of settlement

Results in payments to more than 2,600 nonexempt employees

By John German

A letter from Labs Director Tom Hunter to all employees on Wednesday, Nov. 12, described the terms of a negotiated settlement between Sandia and the US Department of Labor (DOL) that resulted from a recent DOL investigation of Sandia's compressed work week, or 9/80 schedule.

The DOL's investigation concluded that Sandia has not satisfactorily demonstrated that the Labs, in the past, appropriately documented hours worked for nonexempt employees on the 9/80 schedule.

The settlement is resulting in payments to approximately 2,600 Sandians. Checks were being distributed this week. More information about the settlement is available on Sandia's internal web at www-irn.sandia.gov/settlement.

Nonexempt employees include hourly paid, overtime-eligible workers such as technologists, ASAs, OMAs, SMAs, and most employees represented by Sandia's labor unions.

As a result of the agreement, Sandians who were full-time, nonexempt employees and who participated in the 9/80 schedule during the two years preceding May 23, 2008, are receiving settlement payments. (At Sandia/California, where the state statute of limitations is four years rather than two, the settlement includes full-time, nonexempt employees who participated in 9/80 during the *four* years preceding May 23, 2008.)

(Continued on page 4)

Sandia LabNews

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Sandia National Laboratories

COLORFUL CALLING — Duane Schneider (2453) demonstrates a microencapsulation process that results in a chemical being encapsulated in a polymer shell. Familiar uses for microencapsulation include scratch-and-sniff perfume ads in magazines, time-release medications, and carbonless copy paper. Duane is working with a local business to develop a microencapsulation process for a cosmetics product. Read the story on **page 5.** (Photo by Randy Montoya)

Paul Hommert on homeland security

Div. 8000 VP Paul Hommert, who heads Sandia's Homeland Security and Defense SMU, shares his views on national homeland security priorities. Story on **page 3.**

Recycling concrete

When a building comes down at Sandia, what happens to all the concrete and other materials? Under the Labs' P2 pollution prevention program, most of the building materials are recycled, often to be reused right on site. Photos on **page 6.**

Remembering 9/11

Archie Koenemund (4849) was a member of the New York Fire Department on Sept. 11, 2001. For most of us, 9/11 is a historical event that even now is receding into the past. For Archie, every day is 9/11. Read his story on **page 8.**

That's that

Corporate archivist Myra O'Canna has helped us out at the *Lab News* I don't know how many times over the years. Whenever we find ourselves needing to know about something that happened at Sandia 30, 40, or 50 years ago, we call Myra. She's always able to come up with an answer for us. A few weeks back, I asked Myra for some help tracking down that green chile stew recipe* I mentioned in this column, the recipe Chef Hank Perez used to such magical effect in that miraculous Coronado Club concoction.

In the course of her search, Myra came across an item in Sandia's archive collection that she thought I might be interested in. It's a cookbook published in 1954 by the Sandia Base Woman's Club, whose members included spouses of both Air Force and Sandia Corp. personnel. The cookbook, called *Eatomic Secrets*, offers a window on a world now long gone. A better world? I don't know that I'd say that, but it sure was different.

Right off the bat, you notice that most of the recipes don't sound much like the kind of foods we eat today; it's not that the dishes sound bad – not at all – it's just that they're, well, different. (For one thing, there's not even a green chile stew recipe in the book!)

The cookbook was supported by advertisers, dozens of advertisers, optimistic folks who stepped to the plate to support the Sandia Base Woman's Club (all the proceeds from the cookbook went to charity). Those businesses, they're almost all gone now, replaced by other businesses run by other optimistic folks. Albuquerque has changed so much in 50 years. America has changed. Sandia has certainly changed. We didn't vote for it, nobody asked us about it. That's the thing about change: It just happens. It happens even when we don't want it to and wish it didn't. And it happens right under our noses, before our very eyes.

* * *

Still, some things at Sandia don't change. Though our forebears at this laboratory might have dined on . . . let's see . . . "tuna, spaghetti, and cheese casserole" (from *Eatomic Secrets*) they shared a trait that stays with us to this day: They were deeply involved in their community. More than five decades ago, Sandians launched what we now call the Employee Caring Program, or ECP. Today, 50 years on, we're still at it, donating millions of dollars to worthy charitable causes, contributing thousands upon thousands of hours dedicated to the betterment of the community. That's just Sandia culture.

* * *

And speaking of our culture, here's something you don't find everyday: People wanting to give money *back*. You know that settlement we reached with the Department of Labor? The one under which some 2,600 nonexempt employees (those paid by the hour and eligible for overtime pay) are getting checks? It's all related to the way Sandia documented hours worked under the 9/80 schedule. There's no suggestion in the settlement that anyone was underpaid, by the way. You can read the details in the story beginning on page 1.

Anyway, more than a few eligible Sandians, commenting in the *Lab News Interactive* internal-only website and elsewhere, say they don't want the money, say they've been compensated appropriately for every hour they've worked. Some say they'd like to refuse the money, some say they intend to donate the money to charity. Whatever. That's a personal decision, and Sandia has absolutely not suggested that people shouldn't accept the check or that to do so would reflect badly on them.

* * *

*Since a number of folks have asked, here's Chef Hank Perez's green chile stew recipe: Cut beef into cubes, put green chile in the pot with the beef, add water with beef base and cook until ready. Add already cooked beans and potato cubes, garlic, cumin, onion powder, and cilantro (oil is best; use fresh if the oil is not available) and cook until ready. Taste and season. As for proportions, well, if you like cilantro and cumin, use a lot, if you don't, not so much. Etc.

See you next time.

– Bill Murphy (505-845-0845, MS0165, wtmurph@sandia.gov)

Sandians Gary Grest, James A. Miller inducted into NAE

Academy advises nation on pressing technical issues

Two members of Sandia's technical staff were inducted into the National Academy of Engineering at a ceremony on Oct. 5 in Washington, D.C.

GARY GREST

James A. Miller (8353) was elected for "research on the theory and modeling of combustion chemistry that has led to universally applied codes for combustion modeling," and Gary Grest (1114) for "development of large-scale simulations for improved understanding of metals, polymers, and particulate matter."

They were among 65 new members and nine new foreign associates.

The NAE has 2,388 peer-elected members and foreign associates who provide national leadership in engineering.

JIM MILLER

NAE is directed "whenever called upon by any department or agency of the government, to investigate, examine, experiment, and report upon any subject of science or art."

In addition to advising the federal government, the NAE also conducts independent studies to examine important topics in engineering and technology.

Founded in 1964, the NAE operates under the same congressional act of incorporation that established the National Academy of Sciences, signed in 1863 by President Lincoln.

— Neal Singer

Slow down, says KAFB Commander Col. Mike Duvall

On the streets of Kirtland Air Force Base, speeding, careless accidents, and pedestrian, bicycle, and motor vehicle near-misses are increasing at an alarming rate, says KAFB Base Commander Col. Mike Duvall. And he offers a simple solution: Slow down.

Writing in a recent issue of *Nucleus*, the KAFB newspaper, Duvall says the base is averaging two to three vehicle accidents a day.

To emphasize the scope of the traffic safety problem, Duvall notes that during the opening weeks of school, KAFB police stopped between 10 and 20 speeders a day in school zones during designated crossing times. He adds that on occasion, school crossing guards have been struck or brushed by vehicles while escorting children across the streets.

Duvall characterizes the current traffic situation as "unsafe and unacceptable," adding that "unabated, this trend will worsen and someone will be seriously hurt on or around our roadways or parking lots." The solution, Duvall says, is obvious: Slow down.

"Simply slow down your speed when driving on base roads, slow down when backing out of a parking lot, and slow down around the parks and schools," he writes.

Statistics bear out the fact that Sandia drivers are part of the problem. Traffic Safety Committee member Willie Johns (4122) notes that between October 2006 and mid-October 2008, Sandians received 436 citations from KAFB law enforcement.

"This is very eye-opening," says Willie. "Sandia is a national laboratory; our people should be a cut above the rest. Col. Duvall is asking for our help to make the base a safe place to live and work. As Sandians, we need to do our part."

Sandia LabNews

Sandia National Laboratories

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LOCKHEED MARTIN

IES town hall meeting discusses strategies to reduce indirect

Al Romig says Sandians in this together

Div. 9000 VP and Integrated Enabling Services SMU head Joe Polito and IES program leaders at a Nov. 10 town hall meeting provided an overview of the IES strategy as it aligns with the Labs strategy in a changing budget and mission environment.

The meeting also included updates on transformation activities, progress, and plans in each of IES's seven programs: HR, ES&H, Finance, IT, Supply Chain, Corporate Governance, and Facilities. Deputy Labs Director Al Romig, who opened the session, took questions from the audience along with Joe, Program Leaders Council leader Tom Blejwas (9700), and the program leaders.

The town hall video stream can be viewed at http://ln.sandia.gov/ies-town-hall. Questions can still be submitted.

Note: There was an additional town hall scheduled for December, but it has been cancelled due to the same material being covered as the first town hall.

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Take Note

Retiring and not seen in the *Lab News* pictures: **James F. Chapek** (6750), 36 years; and **G. Jeanne Fernandez** (1012), 15 years.

Winning the 'long war' against terror through long-term R&D diligence

• *Commentary by Paul Hommert* •

Note: This opinion piece written by Div. 8000 VP Paul Hommert has been submitted for external publication to HSToday*, a homeland security trade publication.*

The events of Sept. 11, 2001, created a sense of urgency and immediacy in this nation not seen since the early days of the Cold War.

Various sectors — including private industry, national laboratories, government, and academia — responded and have done a great deal to more effectively protect the nation. Airport security is much stricter than it once was. Security at our ports and borders has been bolstered. Advances in technologies aimed at detecting, deterring, and responding to terrorist attacks are real and significant.

PAUL HOMMERT

Yet, out of necessity, those achievements were primarily realized within a do-it-now political and practical framework. The post-9/11 period emphasized deploying near-term solutions to perceived critical threats, and the nation effectively stepped up to that challenge.

Now, the federal government's approach to homeland security needs to come of age and should include a comprehensive, long-term, systematic, and strategic approach with appropriate investments. The government must steward relevant homeland security skills, capabilities, and facilities along with difficult-to-advance high-risk, high-reward concepts that take time to mature. A long-term commitment to homeland security R&D is essential.

This shift is especially important as other emerging national priorities have taken the focus away from homeland security. With the financial crisis, energy costs, and the Iraq war, terrorism seems to have taken a back seat to other pressing concerns.

We should not forget, however, that the last two terrorist attacks against the United States occurred within the first year of a new administration. So it is not unreasonable to suggest, as some already have, that al Qaeda is devising its next attack at a time when homeland security is not as prominent on our national radar screen.

When considering a long-term commitment to homeland security R&D, it helps to recall the role that nuclear weapons have played in the national security of this country. Since 1945, this nation has successfully developed a sustained deterrent that has served as the backbone of our military arsenal. Technological superiority with long-term investment played a critical role in winning the Cold War. Similarly, winning the "Long War" — combating the potential use of weapons of mass destruction (WMD) by terrorists — requires a comparable level of diligence and enduring vigilance.

Breakthrough technologies and resiliency both played important roles during the Cold War and continue to do so with today's Long War. During the Cold War, the nation faced the challenge of being resilient against possible nuclear attack, with the populace aware of, and participating in, preparedness drills. While we don't wish to return to that environment, our societal preparedness in recovering from a WMD event is of great importance.

Science and technology advances can be critical enablers of deterrence and resiliency. One can imagine some "grand challenge" research successes that would have immense impact — such as the ability to remotely detect special nuclear materials, detect biological threats and produce drug remedies in real-time, noninvasively determine the intent of terrorists, or thwart cyber threats by creating trusted networks using untrusted components. What we are able to do in the first hours of an attack makes an enormous difference in the consequences to our nation.

These are "game-changing" homeland-security capabilities. For any of these to have a chance at becoming a reality the following needs to take place:

• We must establish a relevant risk-based, long-term national strategy and investment in homeland security R&D.

• We must maintain national vigilance to address high-consequence, low-probability threats posed by WMD.

• We must ensure societal resiliency to future attacks by addressing response and recovery levels and use.

• We must encourage the use of systems analysis tools and methodologies to guide development and engineering solutions that operate effectively in complex and dynamic conditions.

• We must develop robust processes to transition promising R&D concepts into operation and use by first responders.

• And finally, we must perform a comprehensive review of different governance structures to determine the best ways to integrate the national R&D community — academia, industry, and national labs.

A successful war on terror and WMD will require a thorough and enduring effort, one that can be expected to last decades. The level of diligence and dedication needs to be on par with the nation's steadfastness during the Cold War and our 50-year commitment to a nuclear deterrent.

"We have not witnessed a successful major terrorist event against the United States since Sept. 11, 2001." Will we be able to utter that statement 50 years from now?

Sandia CaliforniaNews

Takedown: Capturing notorious spy Jonathan Pollard and why the case remains relevant to Sandians

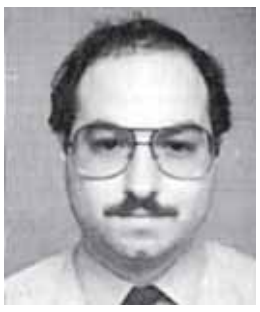
By Patti Koning

Earlier this year, Ron Olive visited Sandia/California to describe the most devastating national security breakdown witnessed in his 22-year career — the case of convicted Israeli spy Jonathan Pollard.

Olive, the agent in charge of counterintelligence for the Naval Criminal Investigative Service at the time of Pollard's arrest, played a key role in the spy's takedown. He tells the story in his 2006 book about the case, *Capturing Jonathan Pollard: How One of the Most Notorious Spies in American History Was Brought to Justice.*

Pollard was a civilian analyst for the US Navy from September 1979 until his arrest in November 1985. In his talk, Olive described the mistakes, miscommunications, and actions not taken that allowed Pollard to work in a top secret (TS) environment despite repeated signs that he posed a security risk.

Biggest breakdown



JONATHAN POLLARD at the time of his arrest in 1985.

Pollard applied for a CIA job after dropping out of graduate school. During the polygraph test, he admitted to smoking marijuana more than 600 times. Afterwards, he reportedly told nine foreign nationals he was going to be a CIA spy but was not hired. He then applied to be a naval defense intelligence analyst. When contacted during the Navy's background check, the CIA claimed no knowledge of Pollard.

"This was the start of the biggest breakdown in the history of American espionage," said Olive. "The CIA misunderstood the policy and thought that it would be a violation of Pollard's rights to share the fact that they had rejected him and why."

The roller coaster of devastation continued. Olive described Pollard's attempts to start a back channel collection operation in South Africa, and coworkers' reactions to him.

"Half the people thought he was a wacko and the other half thought he was the best analyst they'd ever seen," Olive said.

Pollard's security clearance was downgraded but later restored, and he was promoted repeatedly. As his access to TS data increased, his job performance declined. He also received a courier card, allowing him to transport TS and secret compartmentalized information (SCI) without being searched.

Contacted Israeli officer

Olive shared a story of a colleague who scheduled an interview with Pollard for an internal position. Pollard showed up hours late for the interview, looking dirty and disheveled. His excuse for his tardiness and appearance was that his wife had been kidnapped by the Irish Republican Army and he'd been negotiating her release all weekend. Olive said that while the colleague did not believe this story, he also did not report Pollard's behavior to anyone.

In June 1984, Pollard contacted an Israeli colonel and began giving US secrets to the Israeli government. Olive described how Pollard brought suitcases of documents to drop-off locations and removed 15 to 20 boxes of TS/SCI from his office at a time.

In the summer of 1985, Olive transferred to the Washington field office as the agent in charge of counterintelligence for the Naval Criminal Investigative Service. On Aug. 11, a coworker saw Pollard carry two classified envelopes into a car driven by his wife. This struck the coworker as strange because Pollard had said he planned to shred the envelopes for containing wrong information.

After much anguish, the coworker reported the suspicious activity. An investigation began a few days later. Video surveillance conducted in Pollard's workspace showed him emptying files from his desk into a briefcase. Olive shared a clip of this video and audio testimony from the coworker who reported him.

(Continued on next page)

Sandia CI office available 24/7

The Sandia Office of Counterintelligence is available 24/7. "Please contact any member of our staff if you have questions, concerns, or have something to report," says Dennis Rehmeier (8003), deputy senior counterintelligence officer. "If you attended the Ron Olive presentation on Jonathan Pollard, you understand the damage that can be done to our national security when your concerns are not reported. All Sandians have the duty and responsibility to safeguard national security information. Reported incidents are carefully assessed and discreetly handled with no adverse consequences resulting from well-intentioned reporting, even if the suspicion that prompted the report is determined to be groundless."

Awareness by members of the workforce is the foundation to Sandia's counterintelligence and security programs, says Dennis.

For more information, visit the Counterintelligence website at www-irn.sandia.gov/srn-ci/ (or type "Counterintelligence" into SearchPoint).

DOL settlement

(Continued from page 1)

Individual check amounts vary for each nonexempt employee based on criteria and a formula provided by the DOL. The formula takes into account each person's history of participation in the 9/80 schedule during the settlement period. Payment amounts range from $18 to $930 ($18 to $1,860 in California).

"Sandia believes that its employees have been fully and fairly compensated for overtime hours worked and that the DOL findings are related to record-keeping deficiencies that have been corrected."

— HR and Communications VP John Slipke

"Sandia believes that its employees have been fully and fairly compensated for overtime hours worked and that the DOL findings are related to record-keeping deficiencies that have been corrected," says John Slipke, VP for Human Resources and Communications Div. 3000. "Sandia's policies clearly indicate when an employee should be paid for overtime and how employees appropriately record the hours they work."

What the DOL investigation found

The DOL's two-year-long investigation included an extensive review of Sandia's timekeeping system and records, corporate policies, and employee payroll data, as well as interviews with nonexempt employees and Sandia officials. The logic behind the negotiated settlement with DOL is complex.

Sandia's 9/80 schedule allows nonexempt employees, with manager approval, to work 80 hours in nine work days over a two-week period, taking every other Friday as a day off. The 9/80 is a common and valued employee benefit at large companies.

To accommodate the 9/80 schedule and adhere to federal law and Sandia's policies, Sandia's timekeeping system was set up so that each work week begins and ends at midday on Friday. Thus, each Friday straddles two work weeks. This ensures that each work week — midday Friday to midday Friday — is 40 hours of work no matter which Friday is taken as a day off.

In reviewing Sandia's record-keeping practices, however, the DOL could not find adequate documentation of a fixed midday because employees sometimes vary their Friday work hours. Without a fixed Friday midday, according to the DOL, it is difficult to demonstrate that a person who arrives at work early on a Friday morning (and also leaves early the same day), for example, isn't due overtime for the week that ends at midday.

Sandia's position is that its standard work week and compressed work week are clearly defined in its corporate policies, as are its processes specifying how Sandia recognizes and pays for overtime. Nonexempt employees are instructed to record all hours worked, and they are compensated for all overtime as reported on their approved timecards. (Sandia's policy can be found at www-irn.sandia.gov/hr/policies/Benefits/Time/hrwork.htm)

"[T]his investigation brings to light an opportunity to raise awareness of the [9/80] policy's requirements and ensure that all employees understand and follow them. That's the best way to ensure that this option is available to all of us in the future."

In May, as a DOL-approved solution, Sandia asked that managers meet with each nonexempt employee and agree on and document a consistent 9/80 schedule with a fixed midday, and to begin recording all deviations from that fixed schedule (*Lab News*, May 9, 2008). In addition, Sandia expects to introduce for nonexempt employees an improved schedule tracking system this month and a revised timecard system in January that will permanently correct the problem.

"The 9/80 option is a flexible work policy that many employees enjoy," says John. "However, this investigation brings to light an opportunity to raise awareness of the policy's requirements and ensure that all employees understand and follow them. That's the best way to ensure that this option is available to all of us in the future."

* * *

For details, see Sandia's DOL settlement website at www-irn.sandia.gov/settlement.

Terri Lovato wins first-ever NNSA award as Security Professional of the Year

TERRI LOVATO, center, displays the plaque recognizing her as one of two recipients of the first-ever NNSA Security Professional of the Year award. With Terri are, left to right, Div. 4000 VP Mike Hazen, NNSA Associate Administrator for Defense Nuclear Security Brad Peterson, Terri, NNSA Sandia Site Office acting manager Kim Davis, and Labs Director Tom Hunter. (Photo by Randy Montoya)

Terri Lovato has been named one of two winners in the first-ever NNSA Security Professional of the Year award. The award, announced earlier this month by NNSA administrator Thomas D'Agostino, recognizes one federal and one contractor employee (in NNSA parlance, Sandians are considered contract employees) whose contributions to the security programs within the NNSA complex exemplify excellence and commitment.

Terri was presented the award in a ceremony at Sandia by NNSA Associate Administrator for Defense Nuclear Security Brad Peterson. Attending the ceremony were Labs Director Tom Hunter, NNSA Sandia Site Office acting manager Kim Davis, friends, colleagues, and members of Terri's family.

Terri is deputy director of Safeguards and Security Center 4200. In his NNSACAST announcing the winners, D'Agostino noted that under Terri's leadership, Sandia's security program was overhauled, resulting in what he cited as "dramatic improvements in operational efficiency and effectiveness."

Additionally, D'Agostino noted, as the technical security lead for Sandia's 2007 Independent Oversight Inspection, Terri's skills in program management "directly contributed to the most positive inspection reports within NNSA over the past couple of years." In fact, NNSA's Office of Independent Oversight described Sandia's Self-Assessment Program as "a model for the entire complex" and recognized Sandia's "success in addressing Safeguards and Security Program weaknesses and in instituting management reforms and process improvements aimed at strengthening asset protection levels."

Terri played a lead role in the important de-inventory of category I and II special nuclear material from the New Mexico site over the past two years. Her efforts in that process, D'Agostino said, "were extraordinary" and contributed significantly to Sandia's successful program to remove all special nuclear material quantities on schedule.

Center 4200 Director Brian Bielecki says the NNSA award recognizes "the vast contributions" Terri has made to the Safeguards and Security Center, NNSA, and the nation.

"The award," Brian says, "serves as a great way to recognize Terri's unmatched leadership, technical expertise, and personal commitment that has been and continues to be instrumental in the center's efforts to make Sandia the benchmark for security across the DOE complex. We are truly fortunate to have Terri on the Sandia team."

Sharing the award with Terri this year as the federal employee Security Professional of the Year was David Young from NNSA's Y-12 Site Office.

Capturing Pollard

(Continued from preceding page)

In another misstep in the case, the video surveillance was not monitored and it took Olive two months to see what was being captured. On Nov. 18, 1985, Olive and colleagues interviewed Pollard. Before the interview, Pollard called his wife and through a code word (cactus plant) told her to clean out the apartment.

Her cleaning job was incomplete, however, as a permissive search of the apartment turned up 13 TS/SCI documents under the dirty laundry. He was asked to submit to a voluntary polygraph.

Stealing the most secrets

"Pollard told me that he could pass a polygraph if they only ask about the Soviet Union and Soviet bloc countries," said Olive. "At this point we didn't know who he was working for, so this narrowed it down considerably."

Pollard eventually told Olive everything, except he said that he had given the information to a CBS reporter. On Nov. 21, 1985, he attempted to seek asylum in the Israeli embassy, where he was arrested.

Pollard agreed to work with the government in assessing the damage. On June 4, 1986, he pleaded guilty to one count of conspiracy to deliver national defense information to a foreign government and was sentenced to life in prison, where he remains today. He could be released only by parole or through a presidential pardon.

Pollard has the distinction of stealing the most secrets and the most highly classified material in the shortest period of time. According to Olive, it's estimated that Pollard stole 360 cubic feet of material, which encompassed over one million classified documents.

One controversy of the Pollard case is that his sentence of life with a recommendation against parole is excessively severe, especially since he is accused of spying for an ally of the United States. In a November 2006 op-ed piece titled "Lynching Jonathan again" for *The Jerusalem Post*, Olive wrote that: "The judge sentenced Pollard to life in prison based on the magnitude of his crime and Pollard's guilty plea. The US espionage statutes do not differentiate between adversaries and allies. . . . No one in the history of the United States who spied for an ally or adversary came close to causing the colossal damage Pollard did to our national security, given the quantity and quality of information he took in just an 18-month period."

While the Pollard case is now more than two decades old, Olive said it still has importance for everyone who works in national security.

"It's everyone's responsibility to report suspicious activity. Everyone involved still has nightmares over Jonathan Pollard," he said. "The coworker who reported him, that guy is my hero. And to this day, no one, not even Jonathan Pollard, knows that person's name."

Microencapsulation project gives local entrepreneur warm glow

Cosmetics manufacturer works with Sandia under Small Business Assistance Program

By Bill Murphy

Microencapsulation isn't a new technology, but it's always finding new applications. Familiar uses include the scratch-and-sniff perfume ads in magazines, certain time-release pharmaceuticals, and (perhaps mostly for an older generation) carbonless copy paper. Now Sandia's resident microencapsulation expert, Duane Schneider (2453), is working with a local Albuquerque company to use microencapsulation technology in a novel self-warming hand and body lotion.

Microencapsulation, as its name suggests, is the creation of a tiny capsule (or, in practice, lots of tiny capsules), usually just microns in diameter, containing a particular material. In practice, microencapsulation entails placing a spherical shell composed of a synthetic or natural polymer completely around another chemical. That shell delays or slows the release of the core material. When the polymer shell dissolves or is ruptured by pressure, the material it encapsulates is released.

In addition to the familiar uses noted above, microcapsules have found uses in the pharmaceutical, agricultural, cosmetic, and food industries and have been used to encapsulate oils, aqueous solutions, alcohols, and various solids.

Duane didn't start out as the microencapsulation go-to guy at Sandia, but a need arose and he stepped forward to fill it, learning everything he could about the subject, which can be as much an art as a science. Microencapsulation work is but one aspect of Duane's job in the Organic Materials department — he also supports a variety of nuclear weapon, alternative energy, and nanoscience programs as a chemical technologist. Over the years he's developed microencapsulation solutions for a number of critical national security-related projects. For example, his microencapsulation work has found its way into Sandia technology designed to detect explosive materials.

Sandia researchers aren't the only ones who've come knocking on Duane's door. Not long ago, Kevin Mallory, owner and president of Formulab, an Albuquerque-based contract manufacturer of personal care products, had an idea: Why not create a lotion that uses an exothermic chemical reaction to create a slight warmth when rubbed on the hands or body? Mallory, a chemist himself, knew the underlying chemistry was sound. The challenge was: How do you keep the chemicals separate in the lotion until you want the warmth? There were options: You could bottle the ingredients separately, the way epoxy glues are packaged. A more desirable solution, Mallory thought, would be to use a microencapsulation technique that would allow both active components of the lotion to live together in the same bottle. One or both key ingredients would be encapsulated; only when gently rubbed — as when applying a lotion — would the encapsulating polymer rupture, releasing the active ingredients inside and allowing the chemicals to combine in a mild exothermic reaction.

Sport cream and arthritis formula lotions create a sensation of heat; in the product or line of products Mallory envisioned, the exothermic reaction would produce real heat, the amount of heat based on the chemicals used and the concentration of those chemicals.

STIRRED, NOT SHAKEN — One frequently used microencapsulation process involves stirring an aqueous core and an organic solvent containing a dissolved polymer shell material into an emulsion. (Photo by Randy Montoya)

Mallory was convinced he had a winning idea but didn't have the microencapsulation expertise to prove out the concept himself. That's when he turned to Sandia and its Small Business Assistance (NMSBA) program. The folks in the program linked up Mallory with Duane and Duane's boss, Mike Kelly. The three talked about Mallory's idea and what he'd like to accomplish. Duane and Mike agreed that Sandia could help, and Mallory and Duane began working together.

There are several ways to microencapsulate materials, some mechanical and some chemical, and a number of factors to consider when deciding which approach to take.

When Duane analyzed what Formulab wanted to do, he decided to use a so-called polymer-polymer incompatibility method to microencapsulate the materials. In this process the aqueous core and an organic solvent that contains the dissolved polymer shell material are stirred into an emulsion. The stirring causes the aqueous phase to form tiny beads. A second polymer, one that is known to be more soluble in the organic solvent, is then introduced to the emulsion. These two polymers are incompatible in the solvent; that incompatibility causes the intended shell polymer to form a third phase that wraps around the aqueous core material. The shell polymer can then be solidified by means of the addition of a chemical catalyst and/or UV light exposure.

As Duane moved ahead on the project, he invited Mallory to come and observe the work in the Center for Integrated Nanotechnologies (CINT) facility on Eubank Boulevard, just outside the Eubank Gate. At CINT, Duane supports nanoscience research in the laboratory of Dale Huber (1132).

Mallory says his interaction with Sandia was invaluable. "This was like a crash course in microencapsulation; it really accelerated our learning curve. It helped us a tremendous amount," he says.

Mallory characterizes the Sandia relationship as "absolutely fantastic" and, speaking of the NMSBA program says, "I've been thinking about how lucky I am to live in a community where this kind of help is available."

Ultimately, the project ended on a positive note.

"We were able to show that we could microencapsulate the materials," Duane says, adding that a follow-on agreement with Formulab may involve looking at some alternative materials.

"I think it's fair to say," Duane adds, "that Kevin [Mallory] found that what he was looking for wasn't going to be as easy as he thought it might be, but we did show that it was doable."

The Sandia-Formulab relationship was established to develop a proof of concept and that was done. Between that lab bench project and a commercial product there are still plenty of hurdles, but that's the case with every product on the shelves. Kevin Mallory's concept for a self-warming lotion is now one step closer to realization thanks in no small measure to the expertise of a Sandian who stepped to the plate years ago to fill a need when the Labs called.

Sandia MESA team wins NOVA award

Photo by Bill Doty

The construction team responsible for completion of Sandia's Microsystems and Engineering Sciences Applications (MESA) complex — three years ahead of schedule and $45 million under budget — was recognized with a NOVA award from Lockheed Martin at an Oct. 24 ceremony in Washington, D.C.

The $518 million Sandia project is the largest federal investment in microsystem technologies and is the largest construction project ever undertaken by Sandia.

The team was selected "for implementing an essential capability at Sandia National Laboratories to meet the technology challenges associated with the US nuclear weapons mission."

Sandia project lead Bill Jenkins accepted the award for his group at the Smithsonian Institution's National Air & Space Museum.

The NOVA Awards represent Lockheed Martin's highest honor, and are presented "to employees recognized as making outstanding contributions to business objectives."

— *Neal Singer*

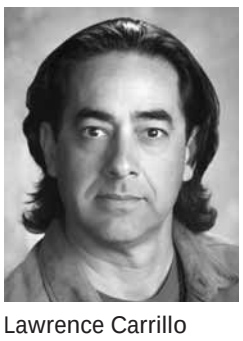
Team members:

Gilbert Aldaz
Ivory Alexander
Mateo Aragon
David Bailey
James Beals
C. Bryan Drennan
Rhonda Dukes
Jon Eberhart
Daniel Fleming
John Harding
Rick Hartzell
Karen Higgins
Ronald Jones
Karen Keyworth
William Kitsos
Ernie Limon Jr.
Lyle Lininger
Frank Martin
Krista Nuttall Smith
Jennifer Plummer
Edward Sanchez
Mark Schaefer
Andrew Zeitler

Mileposts

New Mexico photos by Michelle Fleming
California photos by Randy Wong

Mary Kay Austin
30 215



Lawrence Carrillo
30 8237

J. E. R. Turner
30 6471

Jill Hruby
25 8100

Jim Kajder
25 2717

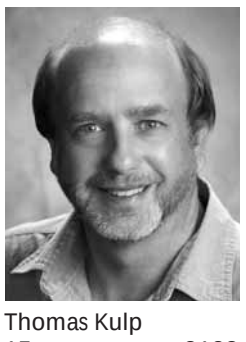
Nanette Morton
20 10610

David Pace
20 6454

Lynne Schluter
20 4856

Rafael Aragon
15 1675

Karen Dalton
15 10615

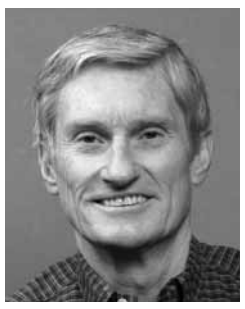


Thomas Kulp
15 8128

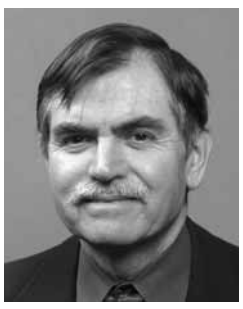
Marie Miller
15 5400

Recent Retirees

Leland Byers
41 9335



Ragon Kinney
41 5334



John McAuliffe
38 3002

Renee Foster
36 3554

James King
35 4844

Frank Lasky
34 2548

Terry Ellis
32 5762

David Harris
30 5632

James Spoonemore
29 8236

Len Stans
24 9330

Joanne Lombardi
20 8243

H. Patty Srader
15 10667

When a building at Sandia comes down — like Bldg. 807, which came under the wrecker's ball this year — most of the concrete and many of the other materials don't go to a landfill. Thanks to efforts by the Labs' P2 (pollution prevention) program, they are recycled, and in some cases, used right here at Sandia. As this sequence of photos indicates, concrete at a demolition site is broken up, sorted, fed into a grinding device, stored in a pile, and then used for roadway construction material around the site. Says P2 program lead Ralph Wrons, "Complete the loop, buy recycled!"

CONCRETE Evidence

Sandia's recycling efforts in reusable building materials

Never Forget

September 11, 2001

Archie Koenemund survives historic day

Archie Koenemund had been with the New York City Fire Department for 20 years before 9/11 changed his life. Today, Archie works in Fire Protection Engineering as an inspector/ investigator. Normally, this is the kind of story the Lab News *would publish on or near 9/11 to commemorate that day. But when Archie's involvement in the rescue effort at the Twin Towers came to our attention, we decided to tell the story immediately because, for Archie, every day brings memories of 9/11, a day when he went toward danger to help save lives.*

By Iris Aboytes

A big cloud was visible as Archie Koenemund (4849) and his firefighter comrades crossed the Brooklyn Bridge. It was Sept. 11, 2001.

The day had started like any other day for Archie. He dropped his son Jarrett at the subway station and went to teach a class to fire inspectors. Commotion from the hallway filled his classroom. A young woman from the legal department was hysterical. Archie went to find out what was wrong. She told him about the twin towers. He left a student in charge of the class and dashed to his seventh-floor office.

Photo by Randy Montoya

ARCHIE KOENEMUND

Almost immediately, his boss tapped him on the shoulder and said, "Grab your gear and get on the bus!" Archie and 25 to 30 fire department personnel commandeered a city bus and proceeded to the World Trade Center site about two miles away.

Getting to the site was unbelievable. "People coming across the bridge were all covered with white dust," says Archie. "A huge cloud of white dust was hovering over the downtown area.

A PLACE OF REFLECTION — Archie created this memorial to help people remember 9/11. The New York Fire Dept. lost 343 personnel that day.

"We were all filled with disbelief," he adds. "Over our radios we kept hearing, 'can't find this crew, can't find that crew, missing firefighters.' They found Father Judd, the chaplain. My boss, Chief Barbara, had not been found.

"A pile of debris three to four stories high was all that remained of one tower. Steel beams, crushed vehicles, concrete, building materials, and fires were visible; nothing else was definable."

"My group began to clear an area for a command post where about 50 cars were burning," he says. "Water was in short supply, but we managed to put out the burning vehicles. People were jumping. There was a lot of screaming, just mass confusion."

Shortly after they arrived, the other tower came down. "We stood behind a bulldozer," he says. "It was like a hundred freight trains roaring by. The pressure felt like a bomb had gone off. We were covered in a mass of dust and debris. It was as if darkness had set in." A little while later they were assigned to the pile.

As concerned as he was about saving people, at the back of his mind Archie was concerned for his son. Jarrett always stopped at the World Trade Center for breakfast, then walked to New York University. "I have no clue if he is alive or dead," said Archie to his partner. "My son may be under all this. God forbid!"

"After regrouping and getting assigned to the pile, my group brought out a woman. She was alive," continues Archie. "That gave us the rush that we needed to keep going."

Later his team was pulled off the pile and told to go toward the river. Bldg. No. 7 was expected to come down. As they were heading up Chief Gancy's body was brought out. "He was the chief of the department," says Archie. "It had a profound effect on all of us."

While regrouping after Bldg. No. 7's collapse, Archie's phone rang. It was Jarrett. He was alive and safe at home. He had witnessed both planes hit. After talking with Jarrett, Archie passed his phone to his group so they could call their families. "I don't know why my phone worked," says Archie. "Most of the cell service in the city was knocked out."

Archie and his colleagues were ordered to go home, but nobody left. They kept digging. They wanted to find their friends and coworkers. "First responders from all over the East Coast began arriving," says Archie. "Exhaustion finally took over and we went home."

Leaving the site, it looked like the downtown area was bombed and strafed. "At headquarters, we were given bags to dispose of the clothes we were wearing," says Archie. "They were not salvageable due to the contamination. No one really knew what was in the dust. It's funny, isn't it? We had to dispose of our clothing, but we wore paper masks that were useless for protection."

"The area was worse in daylight. Crumpled buildings, dust and debris everywhere, fire and smoke, and the smell of death hung in the air.

"The second day was somewhat more organized, but still no SCBA [self-contained breathing apparatus] or respirators, just paper masks." says Archie. "Firefighters kept coming from neighboring cities. Within a week lots of heavy equipment was at the site. The fire burned for about three months underneath."

Archie worked the pile for two 20-hour days, then was assigned to haul equipment and firefighters to and from the site, averaging eight to 10 trips a day.

After two weeks, he became part of the ceremonial division, attending four, five, and sometimes six memorials or funerals a day. Archie was on the ceremonial detail until March 2002, when he turned in his papers and moved to New Mexico, where he had previously lived.

"I would have become a drunk if I stayed in New York," he says. "It started to affect me, as it did many others."

Archie does not work on 9/11. "I want to be alone," he says. He built a 9/11 memorial on his front lawn. More than 2,900 died that day — fire, police, EMS personnel, and civilians. Today many of the survivors suffer from post-traumatic stress disorder (PTSD), lung disorders, and different types of cancer.

Archie's best friend Kevin, who worked side by side with him, was diagnosed with leukemia in 2004 and died on July 30 this year.

"I was doing well," says Archie, "until 2004 when Kevin got sick. PTSD hit me. I checked myself into the hospital and here I be. Never forget Sept. 11, 2001."