Engineer Steve Yearout marks 25th anniversary sending sensors into space

Fifty nuke-detecting sensor sets on US Air Force GPS satellites developed by Sandia/LANL team

Imagine you’re a collection of sensors, flying in formation in one of 31 US Air Force satellites in medium earth orbit above the Earth.

The satellite itself is part of the Air Force’s global positioning system (GPS) that lets truckers, hunters, and lost-city drivers know exactly where they are.

But from your point of view, as a collection of sensors, the satellites are perfect platforms to detect and triangulate in on airborne or space-based nuclear explosions anywhere they may occur.

On the one hand, of course, detection has been no problem: There haven’t been any air-based explosions for decades.

On the other hand, there could be one anytime. And the country that did it might deny doing it if its leaders didn’t believe the US could track it.

So sensors have to be ready to detect a real explosion and do so through a jungle of potential false positives: Lightning bolts that occur more frequently than one per second (as well as unpredictably occurring super-lightning bolts), energetic particles from the Van Allen radiation belt that collide with electronics on the satellites, the wheter of cell phone communication “noise,” and bolides entering Earth’s atmosphere at terrific speeds, flaring and sometimes exploding.

“What was tricky,” says project chief engineer Steve Yearout (5733) of the early welter of cell phone communication “noise,” and bolides entering Earth’s atmosphere at terrific speeds, flaring and sometimes exploding.

By Neal Singer

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SANDIA ENGINEER STEVE YEAROUT displays a 1/15 scale model of a NAVSTAR Block IIR GPS satellite. Over the past 25 years, Steve has activated and tested the responses of sensor packages on 50 similar satellites launched by the US Air Force.

(Continued on page 4)

By Chris Burroughs

Sandia and Kirtland Air Force Base may soon share a wind farm that will provide as much as one-third of the electricity used by the two entities.

The Labs’ Wind Energy Technology Dept. 6333 and the DOE Wind and Hydropower Technologies Program have embarked on a project to determine if such a plant is viable and to build a roughly 30-megawatt (MW) farm on the air base. A private company would design, build, and operate the farm, and DOE/NNSA, Sandia, and Kirtland would buy the electricity.

Maximizing renewables

Dept. 6333 Manager Jose Zayas says the project — called Sandia Wind Farm Feasibility Project — is part of the DOE Transformational Energy Action Management (TEAM) initiative. According to Energy Secretary Samuel Bodman, the TEAM Initiative goal is to “maximize installation of secure, on-site renewable energy projects at all DOE sites.” In addition to installing renewable energy, other DOE goals are to reduce energy use by 30 percent and use third parties to finance the projects. The project would also be a way to reduce energy intensity and greenhouse gas emissions, increase use and efficiency of renewable energy technologies, and adopt sustainable design practices as called for in President Bush’s January 2007 Energy Independence Bill. (Continued on page 5)

By May 23, some nonexempt employees on the 9/80 schedule will need to meet with their managers to agree on a consistent work schedule. A form (SF 4890-DEV) is available at the Corporate Forms homepage for documenting fixed 9/80 schedules for nonexempt employees whose schedules differ from Sandia’s standard 9/80 work hours.

Nonexempt status includes anyone eligible for overtime pay: Technologists, Administrative Staff Associates, Senior Management Assistants, Office Managers.

(Continued on page 4)

Labs’ 9/80 timekeeping requirements to change

By Chris Burroughs

Wind farm may be on the way for Sandia, Kirtland Air Force Base

Department seeks industry interest in a 30-MW farm on base

By Chris Burroughs

Sandia volunteer Morgan Sparks, who died in a car crash on April 20, 2008.

Morgan Sparks dies at age 91

Led Labs from 1972-1981

Morgan Sparks, who led Sandia during the demanding decade of the 1970s and whose role in the development of the first practical transistor while at Bell Labs secured his reputation in the annals of American science and technology, has died at his daughter’s home in California.

Morgan Sparks, who led Sandia during the demanding decade of the 1970s and whose role in the development of the first practical transistor while at Bell Labs secured his reputation in the annals of American science and technology, has died at his daughter’s home in California.
It was time for Sandian Anthony ‘Tony’ Montoya to go home

“Tony had an effect on my life from the start of the workday — 6 a.m.,” says Kenny Gutierrez (2434-1). “I would be at my computer and he would walk in, sit behind his desk, and then ‘Heidi, can I have your help?’ You walked through the door, and not a second later say, ‘Is it time to go home yet?’”

Tony died suddenly April 23 at age 55. He had been at Sandia 23 years. He was a member of Electronic Fabrications Dept. 2434. “Tony was respected by his peers not only for his technical skills but for “lead by example,”” says Kevin Santistevan (2434), Tony’s schedule enabled him to go home at 3:30 p.m. Many days he would come to see me a little after 3 p.m. and say, “Well, it’s too late now. I’m going home.” I think in my hearts I feel it was too late for him to leave us early.”

A fierce competitor

“Tony was the type of man you would meet in the morning and by the end of the day you would wonder if he was the same person,” says Michael Garcia (2434-1), his best friend at Sandia. “He was a fierce competitor on any field,” says Michael. “Winning or losing, Tony was always the guy you looked up to. He was a powerhouse. Everybody loved Tony. Everybody felt special as he addressed everyone in his morning and by the end of the day he was your friend,” says Michael. “He was respected by his peers not only for his technical skills and lead by example,” says Kevin Santistevan (2434). “Tony had what we have called Tony-lams, funny little sayings, for different situations. They were his insightful ways of communicating,” adds Michael. “You knew exactly what he was trying to tell you as he would say, ‘Another day, another 15 cents’, ‘We went to school, didn’t we?’, ‘I plead insanity,’ and the one Tony used often — ‘Is it time to go home?’” For Tony it was — time to go home.” — Iris Abeytes

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**‘Power to save the world’ is subject of next Tech Symposium**

Power to Save the World: The Truth About Nuclear Energy. That’s the audacious title of the next Technol-

ogy Symposium session, scheduled for May 20, 11 a.m., in the Steve Schiff Auditorium.

It’s also the title of a book by Gwyneth Cravens, who, along with retired Sandia scientist Rip Anderson, will discuss the book’s main theme: The promise that nuclear energy holds to break the nation’s reliance on fossil fuels and reduce greenhouse gasses.

Cravens began as a skeptic about nuclear energy, but that’s a choice conclusion shared with Rip Anderson about a decade ago, she was sufficiently taken aback by the information he imparted that she embarked on a project to learn everything she could about nuclear energy. Anderson enjoyed a formidable career at Sandia in the fields of probabilistic risk assessment and nuclear and environmental health and safety. Under his tute-

lage, Cravens became convinced over time that nuclear energy itself could mitigate the risks and that it does indeed hold the “power to save the world.” She wrote a book describing her journey.

How Cravens book and Anderson’s close relationship guides her around the nation’s nuclear energy infra-

structure. At each stop of “The Nuclear America Tour,” Cravens learns things that surprise her, that don’t con-

form to her preconceived ideas about nuclear power and its dangers. Power to Save the World: The Truth About Nuclear Energy is now in its third printing and is currently the top-selling book at Amazon.com in its particular subject category (nuclear energy).
Biofuels work gets another adrenaline shot

By Mike James

Another seed was planted in support of Sandia’s biofuels research last month when the lab snagged $600,000 in funding ($300,000 a year for two years) for “Development of Saccharifying Enzymes for Corynebacterium. The award, in response to a call from DOE’s Office of Energy Efficiency and Renewable Energy, is part of a joint proposal led by industry partner DOE’s Lawrence Livermore National Laboratory. A new partnership is sponsored by the Lab’s Industrial Biofuels Research (IBF) program.

“This is another example of work that is being supported by DOE and others,” says Rajat Rajkumar, then the division’s manager of energy efficiency and renewable energy programs. “It’s part of a larger push to develop more efficient methods of producing biofuels from biomass.”

The enzyme researchers are seeking to develop biofuels from the lignocellulosic biomass, a type of material that includes wood, grasslands, and other plant material. The enzymes they are working with are split into two categories: those that break down cellulose and those that break down lignin. The enzymes are currently being tested in a biorefinery to determine the feasibility of producing biofuels from lignocellulosic biomass.

New VP 4000 Chief Protection Officer Mike Hazen heads organization with expanded responsibilities

He says a personal bumper sticker would read ‘Mission support first, people always.’

By Chris Burroughs

If Div. 4000 VP Mike Hazen had a bumper sticker to wear next to one for the Air Force, it would read “Mission support first, people always.”

He says his decisions and the way he works with people are always based on that frame of reference.

“The people I’m blessed to work with are the best,” he says. “And they’re the most precious resource and crown jewels of this organization. They are the most valuable asset and principle leader.”

Mike was promoted to VP of Infrastructure Operations & Protection Div. 4000 eight months ago after serving as director of Safeguards & Security 4200 for three and a half years. Before joining Sandia, he was a colonel in the US Air Force with a career that spanned 31 years, culminating with his assignment as the director of security forces, Air Force Space Command.

The division that he was tapped to head is nothing like the one he was a part of as a protection officer. Ron Detry said. As a result of a strategic management decision, two new areas of work — Facilities and ES&H — were added to the division, which formerly consisted only of Safeguards & Security. The rationale to make the change, Mike says, was to “put key mission support activities together so they could, together, effectively and efficiently support Sandia’s national security missions.”

When he assumed the new position, Mike, with management approval, changed his title from Chief, Security Officer to Chief Protection Officer, a reflection of the division’s broadened duties.

“My areas of responsibility now include protecting people, environment, information, and resources,” he says. “I wanted the title to show that Division 4000 was an integrated force dedicated to the health and welfare of all the people at this great national security laboratory.”

He says the goal of the new division is “to mature as an organization and, most importantly, to work as one team all working to make Sandia and our nation better.”

The challenges are many for the new vice president. Among them are sustaining gains of Safeguards & Security, ES&H, and Facilities over the past few years, creating an environment where everyone can excel, opening lines of communication with everyone at Sandia, and preparing for a future that “certainly will be full of change and uncertainty.”

He adds, “We need to ensure that we become a more powerful organization by partnering, supporting, and encouraging a diverse work force. This means a focus on "people first," and that’s how we get better.”

Mike has high expectations and values help us all be guided by them. I’d add one more value ‘caring’ [for each other] — along with a recognition that providing mission support is not only honorable giving us the chance to be proud of what we do.”

Mike says his division is being impacted by budget reductions “same as everyone else and it should be.”

“Our challenge here is that there will be some things we just can’t do, “ he says. “We have to continue to prioritize and support the best to our ability the mission and become more efficient by using Lean Six Sigma, simplifying processes, and doing away with redundancies, bureaucracy, and work that doesn’t add value.”

Another challenge Mike cites is reduced security and building footprint at Sandia in an initiative that is spawned by an NNSA mandate and the Labs’ desire. Older high-maintenance and costly buildings are being removed and better use of Sandia’s newly expanded facilities is a key. In addition, some laboratories, such as benefits and badging, have been moved off of Kirtland Air Force Base to make access to them easier. The most secure areas remain on base.

Besides reducing the building footprint, over recent months the security footprint has been dramatically reduced. Sandia completed a highly successful phase one special nuclear material inventory, as well as an ongoing vault and vault-type room reduction. This, Mike says, has saved a “lot of security dollars.”

Mike is particularly proud of gains in environmental protection, which has won numerous awards. “We’re going green and it is something we all should be very proud of,” he says. “The environmental and management programs earn recognition below.’

His goal is for Division 4000 to successfully meet all the challenges head on and become the “standard by which everyone is compared.”

Sandia environmental management programs earn recognition

By Chris Burroughs

Sandia’s environmental management programs have been recognized with national and local awards, including the recent achievement of becoming EMISMS compliant with reporting requirements and 100 percent compliance with their permit discharge limits.

• Sandia received an NNSA Best in Class and an honorable mention for the DOE P2 Star for green chemistry, which is the use of a set of principles that reduces or eliminates the use or generation of hazardous substances in the design, manufacture, and application of chemical products.

• Sandia California was accepted into an Environmental Management Leadership Team (EMILT) for committing to complete Arroyo Seco improvements, reduce hazardous waste volume, reduce hazardous waste volume, and reduced hazardous waste volume.

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Satellite

(Continued from page 1)

sensor placements. “Is that we did not have a good idea what our observations of the environment would look like from the standpoint of location. Looking at Earth with sensors was new and not well understood— the background noise, the clutter.”

Sandia involved since 1983

Steve should know. No matter which GPS satellite the sensors fly on, Steve has been there to turn them on and test their responses in the sky.

“We started launching our part of the payloads in 1983,” he says. “We’ve done 50 payloads so far. I’ve been involved in turning on all 50. That would be an average of two payload launches a year for the past 25 years, the most recent in March. His team packages them in what resemble several golf suitcases. The sensors include X-ray and particle-detectors from Los Alamos National Laboratory. Each payload provides optical and electromagnetic pulse (EMP) sensors, radio frequency equipment, and the main processors that coordinate all communications from the ground, as well as return sensor output back to ground.

THE ONE THAT GOT AWAY — Steve Yeatman captured this photo of a Delta rocket booster that was carrying a GPS satellite just seconds after launch. Steve explains that there are nine solid booster rockets around the bottom of the Delta, which is liquid-fueled. In this incident, it is believed that one of these solids split and started an uncontrollable burn, initiating the self-destruct mechanism that destroyed the rocket just about the time the range safety officer pushed the destruct button. Steve has been involved with 51 launches of GPS satellites carrying Sandia sensors. This is the only one that failed.

“Also we have a state-of-health telemetry system that allows us to see how our system is functioning,” says Yeatman.

The sensors are delivered to an Air Force contractor (in the past, either Boeing or Lockheed Martin), which integrates the boxes into the satellite package. The satellite is launched from Cape Canaveral (the Air Force side of Kennedy Space Center), and then, once in orbit, switched on remotely by Steve and his teammates from Sandia, LANL, and the USAF.

Perfectly synchronized atomic clocks on all satellites mean that telemetry, geometry, and control functions working together can accurately determine the position of any point of interest.

Difficult it is to test equipment in advance of the environment in which it will be used, the Sandia group’s sensor packages have performed exceptionally well over the years.

“We build pretty good stuff”

This includes surviving one faulty rocket that exploded on takeoff in the 1980s. A number of the boxed Sandia boards survived and were still operable.

“We build pretty good stuff,” says Steve. He doesn’t count this launch as one of his 50.

Steve, ready for new career challenges, envisions “way down the road” moving into a arena just slightly downstream:

“Analyzing data produced by the sensors he helped design, oversight in production, watched launch, and keyed into action.

But for now, Steve is looking forward to turning on many more space-based sensor systems.

9/80 timekeeping

(Continued from page 1)

ment Assistants, and all represented employees.

The new requirement — a stopgap measure until permanent changes can be made to Sandia’s electronic timekeeping system and policies — is a necessary step toward adding rigor to timekeeping practices for nonexempt employees.

The need for this additional rigor was identified as part of a US Department of Labor audit of Sandia’s timekeeping practices that is nearing completion.

The audit and the need for employees and managers to document deviations from Sandia’s standard 9/80 schedule were discussed in a Nov. 16 memo to managers from the Division Human Resources Consultant (HRC): “The standard work hours for employees on a 9/80 schedule are 7:30 a.m. to 4 p.m. on alternate worked Fridays. If a nonexempt employee adheres to this schedule, no written documentation is required. However, the nonexempt employee wants to work a 9/80 schedule that differs from these standard 9/80 hours for their Friday worked, the employee and manager must document the employee’s fixed 9/80 schedule using the form.

No written documentation, deviations from that schedule on the employee’s Friday worked must be recorded appropriately on the employee’s timesheet.

Careful time recording on the Friday worked is of particular importance because the way in which Sandia’s timekeeping system splits the workweek on Friday.

It does allow for the most flexibility possible, the form permits, with manager approval, start times every half hour from 5 a.m. to 9:30 a.m.

For more information, contact your manager or your Division Human Resources Consultant (HRC): www-im.sandia.gov/hr/Division_HR/Consultant. On the broader issue of 9/80 it applies to all employees, says Julian, Sandia’s management recognizes and values 9/80 as an important work/life benefit and it is Sandia’s intent that it be continued. It is, however, important that Sandians recognize the need to carefully document and appropriately monitor the work schedules of nonexempt employees.

Space: Enough? Too much?

Let this team help you sort it out

Before and After — Integrated Military Systems Development Center 5400 recently conducted a Lean Six Sigma (LSS) Event on its primary design, assembly, and test lab. The major accomplishments were as follows: First, the team removed three flatbeds worth of unused and obsolete equipment, tools, raw materials, and property items for reapplication. Second, the team removed obsolete furniture, safety hazards, and chemicals that were no longer needed, thereby increasing safety and reducing potential hazards. Third, the team created increased capacity and efficiencies for new and emerging projects.

Thanks to a flat budget and an aggressive construction schedule, a major accomplishment was reducing potential hazards. Third, the team created increased capacity and efficiencies for new and emerging projects.

By John Zavadil and Camille Reyes

Sandia is faced with a constant challenge: how to make sure there is enough space to meet mission needs while using that space as efficiently and effectively as possible.

Just a few years ago, line organizations were desperate for office space to house new mission work. Thanks to a flat budget and an aggressive construction program that has added a lot of new space since 2003, Sandia now has more office space than is required by mission. Sandia’s management is looking at ways to eliminate or reuse excess space, and Lean Six Sigma (LSS) tools are helping to lead the way.

The facilities organization has initiated a series of “structured improvement activities” (SIAs) using LSS methodology to increase awareness of the space situation and discover opportunities.

LSS black belts from Lockheed Martin facilitated the first SIA with the Defense Systems and Assessments (S&MA) in October 2007. Sandia black belts have since hosted a second SIA for divisions 4050 and 10000, and a third SIA is being planned for Div. 6000. The goal is to conduct an SIA for each division or SMU at Sandia by the end of the year.

SIAs follow an LSS methodology, but one tool in particular has had a significant impact — the 6S scorecard. 6S stands for sort, straighten, shine, standardize, safety, and sustain. SAAs attend and use the scorecard when they tour their space during an event; it allows them to view their space in a different way. The attendees find that materials tend to accumulate, leading to clutter and the appearance of needing more space. The 6S scorecard allows occupants to clean up, reduce clutter and safety of their space so they can accomplish the same work in less square footage.

This increased awareness about excess space is already paying off. Sandia will vacate the Research Park lease by the end of May, saving about $1.1 million in annual lease costs. Low-utilization buildings are also being targeted to identify additional space that could be used.

To date, much of this effort has focused on offices, because data on office use is more readily available and offices are easier to consolidate than laboratories. However, offices account for only about one-third of Sandia’s total square footage, so future SIAs will explore the significant opportunities available for improving laboratory usage.

If you have questions, contact Lynne Schluter (4856), the manager leading the structured improvement activities program, at 505-284-5206 or lhschlu@sandia.gov.

Questions about LSS? Contact Laura Guehlerhofer, corporate black belt, at 505-284-3469 or lguehler@sandia.gov.
Wind farm

(Continued from page 1)

Executive Order 13423.

A Request For Information (RFI) was recently placed on a Sandia procurement website in an effort to make commercial, utility-scale wind farm developers, owners, operators, energy service companies, and financiers aware of the potential opportunity to build a wind farm on the base. Deadline to respond to the RFI and be eligible to compete for the partnership is July 3.

In addition, Sandia is holding an “Industry Day” on June 10 in Albuquerque where interested developers can obtain information and ask questions. At the meeting Brian Connor of DOE’s Wind and Hydropower Technologies Program will address the federal goals and objectives of the TEAM initiative and how they will apply to other DOE sites, including Sandia.

Project engineer Roger Hill (6333) says this project is highly unusual for a variety of reasons. “Usually, private companies build wind farms to sell power to utilities or utilities install wind turbines for their own system use,” Roger says. “Here we are looking for a private company to build a wind plant on federal land for federal (Sandia and Kirtland) consumption.”

Roger says that the Manzano mountain site is believed to be one of the best locations of all DOE facilities for a wind farm. Its wind yield is in an indicated wind power class 5 or 6 on a scale of 1 to 7, falling just short of superb.

As part of the feasibility study, the team will spend a year assessing the wind characteristics, as well as looking at accessibility to transmission lines, base substations, and PNM’s Sandia switching station. Roger anticipates that as the feasibility study moves along, issues will be identified that will need to be addressed. For instance, the wind turbine installation or operation might conflict with current or planned base operations. Also, an environmental assessment must be performed to ascertain and perhaps mitigate impacts on wildlife.

For instance, the wind turbine installation or operation issues will be identified that will need to be addressed. Also, an environmental assessment must be performed to ascertain and perhaps mitigate impacts on wildlife.

The wind power class 5 or 6 on a scale of 1 to 7, falling just short of superb.

Wind farms in New Mexico are located in Guadalupe County (Aragon Wind), Quay County (Caprock Wind Ranch, Phases I and II), Roosevelt County (San Juan Mesa), and Quay and DeBaca counties (New Mexico Wind Energy Center). Jose says the idea of a Sandia/Kirtland wind farm is “as exciting as it gets” because it provides the opportunity to showcase Sandia and be one of the first DOE sites to have a utility-scale wind farm where power is being consumed.

“This is a pioneering effort that meets the national initiative for renewable energy deployment,” he says. “Plus it contributes to our self-sufficiency and sustainability. We are using a natural indigenous resource to meet our own needs. And it can be replicated elsewhere. It’s a big deal.”

Tom Hunter addresses community leaders at 2008 State of the Labs event

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THE ANSWER, MY FRIEND — A wind farm like this one in the desert near Palm Springs, Calif., could be in Sandia’s future if a proposal to build a wind farm on Kirtland Air Force Base comes to fruition. Sandia and Kirtland, with the support of DOE’s Wind and Hydropower Technologies Program, are exploring the possibility of installing a roughly 30 MW wind farm on the base. Power generated by the facility would be shared by the Air Force, NNSA, and Sandia. The facility would be built, owned, and operated by a private company. (Photo by Randy Montoya)

Wind energy facts

• At the end of 2007 New Mexico was producing 496 MW from wind, ranking the state 15th in the nation in the amount of energy produced by wind power.

• In 2007 wind accounted for 30 percent of new power-producing capacity added to the national grid, more than 5,200 MW of wind capacity was installed in the US, bringing the total capacity to 16,819 MW, making it second only to Germany.

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(Continued from page 1)
Morgan Sparks led Labs from 1972-1981

Was noted for his role in development of the junction transistor at Bell Labs

Morgan Sparks came to Albuquerque from Bell Labs in 1972 to serve as director of Sandia National Labs. In addition to a new job, he found a new home, becoming a deeply involved civic leader.

He lived in Albuquerque for the rest of his life. Morgan, who served as Labs director from 1972 until his retirement in 1981, died May 3 at his daughter’s home in Santa Fe. He was 92.

Sandia President and Labs Director Tom Herron refers to the Morgan Sparks era as a pivotal one for Sandia. Says Tom, “Morgan was president when I was a young staff member at Sandia. He set the framework for Sandia to become a multi-program Lab. He was widely recognized for his ability to engage the Lab in many new areas that proved to be important for our future.”

“Morgan was a great American and a respected leader in our community, especially in his extraordinary support for the University of New Mexico.”

“Morgan Sparks is a great example of a scientist who has contributed significantly to almost every modern aspect of science and technology.”

“Morgan Sparks was known for his role in development of the junction transistor at Bell Labs.”

Morgan Sparks and the junction transistor

The first transistor was a rickety contraption that was almost impossible to mass-produce. Bell Labs researcher William Shockley conceived of the “junction transistor” — a three-layer sandwich of semiconductor materials such as silicon and germanium — that would be much more reliable and a lot easier to manufacture than the first transistors developed at Bell Labs. It would take three years of research advances in materials science by Morgan Sparks, Gordon Teal, and other Bell Labs researchers before the concept could finally be actualized.

Morgan fabricated a crude prototype of this junction transistor in 1949, proving that Shockley’s ideas were indeed correct. Working closely with Teal in early 1951, Sparks figured out how to inject impurities into the molten material from which the crystals were being made, establishing the interfaces or “junctions” between adjacent semiconductor layers required in Shockley’s design.

Bell Labs announced the resulting device, the “microwatt junction transistor” to great fanfare on July 4, 1951. Several months later Morgan wrote an article on the new device. “The junction Transistor,” which appeared in Scientific American. Junction transistors soon began displacing vacuum tubes in such electronic devices as hearing aids and portable radios — the transistor radios that a post-war generation grew to love.

By the decade’s end, transistors had become a staple element of electronic computers. With the early 1960s emergence of the integrated circuit, or microchip, their populations began to burgeon almost wildly. According to Gordon Moore, a cofounder of Intel Corp. and author of the famed Moore’s Law, “We make more transistors every year than the number of printed characters in all the newspapers, magazines, books, photocopies and computer printouts.”

Morgan Sparks with an early transistor.

Morgan Sparks was a great American and a respected leader in our community, especially in his extraordinary support for the University of New Mexico. Morgan Sparks is a great example of a scientist who has contributed significantly to almost every modern aspect of science and technology.

Fashioned the first practical transistor

Before coming to Sandia, Morgan enjoyed a distinguished career at Laboratories in New Jersey and is best remembered as the person who fashioned the first practical transistor, the semiconductor device that has revolutionized almost every aspect of modern life (see “Morgan Sparks and the junction transistor” at right).

Although his consequential career at Bell Labs assured his place in the history of American science and technology, it was at Sandia that Morgan left his mark on the history and mission of generations of Labs researchers.

Morgan became the quintessential Sandian, a fact that was appreciated by Sen. Pete Domenici, R-N.M., who was elected to the US Senate the same year that Morgan became Labs director. Upon learning of his passing, Domenici said, “Morgan Sparks set a high standard for the professional, efficient management of Sandia National Labs. He recognized the future need to channel lab science into technology transfer, and he led the groundwork to link defense-based research to applications that now impact our lives every day.”

砂. For working to make Sandia one of the best research labs in the nation. He was my friend.

In an interview after his retirement for Relaxations for Tomorrow, a special 40th-anniversary Sandia publication, Morgan reflected on what it means to be a Sandian.

“For some time here [at Sandia] the vice president for administration had a special assistant, a troubleshooter. I was that person. I was the one who could access the president of the company and make sure the Sandia scientists were listened to. I was the one who could access the president of the company and make sure the Sandia scientists were listened to.

“In the early 1950s, I was responsible for making sure that the Labs was doing what it was supposed to do. I had to go to the Labs to make sure that the Labs was doing what it was supposed to do. I had to go to the Labs to make sure that the Labs was doing what it was supposed to do. I had to go to the Labs to make sure that the Labs was doing what it was supposed to do.”

Morgan Sparks was active in Albuquerque civic life, serving as chair of the United Way, the Police Commission Task Force, and a member of the Police Commission Task Force. He served on the boards of Presbyterian and Lovelace Hospitals, the New Mexico Symphony Orchestra, and Albuquerque Academy. Until 2007 he was president of High Desert Investment Corporation, the developers of the High Desert and Mariposa communities.

In 2006 he was preceded in death by his wife of 57 years, Elizabeth Madayvors Sparks. They have four children, Margaret Pottle of Whiffield, VT; Gordon Sparks of Whiffield, Patricia Fusting of Fullerton, Calif.; and Morgan Sparks Jr. of Burlington, VT. A memorial service will be held in Albuquerque Operations Office Director Herman Rosier, New Mexico Gov. Jerry Apodaca, and New Mexico Sen. Pete Domenici.

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Good at almost everything he tried

Jack Howard, who served as Morgan’s executive VP from 1973 to 1981, recalled the many dimensions of the man: “Morgan Sparks was good at most anything he tried.”

Jack wrote in an email to the Lab News, “The transistor won Nobel prizes for three physicists at Bell Labs but it wouldn’t have worked without the epitaxial layer Morgan cooked up for them.”

“At Sandia he quickly became abreast of the weapons business; Sandians know the great job he did while he was there.”

“After he retired he saved the Albuquerque Police Department from a work-stoppage by acting as arbitrator between the City and the Police Union. The Anderson School of Management at UNM needed a short-duration boss while they made a nationwide search for a new one. Morgan stepped in and served as dean [until a permanent replacement was hired].”

During the 1950s, 1960s, and early 1970s, Morgan rose through several management positions at Bell Labs and the Western Electric Company, the manufacturing arm of the parent company AT&T. After his retirement from Sandia, Morgan accepted an appointment to the Robert O. Anderson School of Management at the University of New Mexico where he served as dean from 1981 to 1984.

Morgan was active in Albuquerque civic life, serving as chair of the United Way, the Police Commission Task Force, and he helped lead the effort to keep and enhance the activities-sites at Kirtland Air Force Base. He served on the boards of Presbyterian and Lovelace Hospitals, the New Mexico Symphony Orchestra, and Albuquerque Academy. Until 2007 he was president of High Desert Investment Corporation, the developers of the High Desert and Mariposa communities.

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Sandia employees and retirees receive volunteer awards

By Iris Aboytes

As part of National Volunteer Month, Sandians and Sandia retirees were recently recognized for volunteering more than 114,000 hours to improve our community.

The President’s Service Award was presented to 262 Sandians who volunteered more than 100 hours. Seventy-one Sandians received a Community Service Award for volunteering more than 100 hours to one nonprofit agency. Sandian Larissa Velasquez (4018) received the employee Shining Eagle Award, and Timothy Boyle (1815) and Bernadette Hernandez-Sanchez (1815) received the Goodness Award.

Larissa and her husband Jeff became involved with Thunderbird Little League when their oldest son Erik began playing T-ball. Halfway through the season, the manager and team mom quit. That was 11 years ago, and Larissa and Jeff have been manager and team mom ever since. They also serve on the Thunderbird Little League board of directors.

“It’s amazing to watch each child grow more and more confident each year and know that fundamental principles are being taught that will help them become good citizens,” says Larissa, who volunteered more than 1,300 hours last year. In honor of her volunteer efforts, a check for $500 was given to the president of Thunderbird Little League.

Larry Lane worked 580 hours for Habitat for Humanity, Travel Talk Senior Center, and Friendship Force. Larry says he gets a great deal of satisfaction from doing something that yields tangible results, especially when helping someone. “It is lot better than sitting home watching soap operas,” he says. In honor of his volunteer work, a check for $500 was given to the Greater Albuquerque Habitat for Humanity.

Timothy Boyle and Bernadette Hernandez-Sanchez received their award for encouraging students to pursue science and engineering careers. They have mentored students from high school through postdoc appointments, by providing meaningful work experiences, advice, and opportunities. Tim mentored Bernie and now she enjoys mentoring others. Together they created successful “CSI-based” science outreach programs that engage K-8 students in discovering the fun and challenges of science. They incorporated nanotechnology and crime scene investigation experiences into the International Science Fair high school intern program, and developed a partnership with Albuquerque Institute for Mathematics and Science (AIMS).

“When I think I’ve tapped everyone out in giving, Sandians just keep answering the call for more,” says Patty Zarrora (3852), Sandia’s volunteer coordinator. “Sandians value the importance of giving back to the community. Thanks to the more than 800 registered volunteers, I am overwhelmed by their generosity,” she says.