George C. Dacey

GEORGE C. (CLEMENT) DACEY

1921–2010

Elected in 1973

"For pioneering experimental and theoretical field-effect transistor studies and directing important laser research."

BY C. PAUL ROBINSON

GEORGE CLEMENT DACEY was a pioneer who began his career at the start of the early nuclear and electronics efforts of the 1940s, as new discoveries in these fields began to transform the American science scene. After earning a bachelor of science degree from the University of Illinois in 1942, he worked at the Westinghouse Research Laboratories in support of the US military research and development efforts during World War II. After achieving some notable success in helping to develop a system for jamming German gun-laying radars, he was assigned by Westinghouse to join the work at the University of California Radiation Laboratory—within the Manhattan Project—that was to successfully produce the world's first atomic bombs/nuclear weapons, whose use in Japan brought an end to the war. Late in the project George moved on assignment to work at another highly classified site of the Manhattan Project at Oak Ridge, Tennessee. When the war ended, he pursued and earned a PhD in physics from the California Institute of Technology, in 1951.

Dacey stayed at Caltech for a year under an A.O. Smith postdoctoral fellowship. But after hearing a seminar at Caltech by William Shockley, the inventor of the transistor, he got sufficiently excited that he applied to and soon joined the efforts on solid-state transistors at the Bell Telephone Laboratories in

New Jersey. A highlight of his early work there was when he and a colleague, Ian Ross, invented and developed the first working field effect transistor device, which became the most popular solid state electronics device for many years thereafter.

George accumulated nine patents in related technologies and led a group at Bell Labs in developing new silicon transistor devices, becoming assistant director (1958) and then director of solid-state electronics research (1960–1961). He was then chosen by the Bell Labs leadership to go to Sandia National Laboratories in Albuquerque, New Mexico, as their vice president of research. At that time Sandia, operated by Bell Labs for the US Atomic Energy Commission, was responsible for the development, design, and engineering of all of the electronics and many other weapons systems—including arming, fusing, and firing components—as well as security protection and state-of-health systems for all US nuclear weapons. George proved himself to be a very capable and inspiring leader at Sandia to take on these sensitive and difficult responsibilities, and he built up the advanced research capabilities there, ensuring that the highly classified weapons systems utilized leading-edge technologies, including some of the most advanced mechanical and electrical devices anywhere.

George's success at Sandia led to his recall by the Bell leadership to Bell Labs, where he was promoted to executive director of the Telephones and Power Divisions (1963–1968) in Holmdel, New Jersey—the group responsible for the design of the actual telephone instruments used nationwide at that time. He next became a vice president of the Bell Telephone Laboratories, where he was responsible for the Telephones and Power Division for the next 13 years (1968–1981). From that post he took charge of the planning and systems analysis of the major expansion of the US telephone infrastructure (1981).

George's classified knowledge from his unique Sandia experiences served him exceptionally well, as he led several national studies on how best to deploy the systems, while ensuring the survival and continuing operations of the US communications infrastructure and systems under radiation effects from nuclear attacks, including electromagnetic pulse threats. These highly classified studies were among the most important studies of these phenomena and stood for many, many years as the pinnacle of design practice for ensuring continuity of US strategic communications systems.

In 1973 George Dacey received the singular honor of election to the National Academy of Engineering, where he joined both the Electronics, Communication, and Information Systems Engineering and the Industrial, Manufacturing, and Operational Systems Engineering sections. He subsequently served as a member of the Committee on the International Exchange and Movement of Engineers. He was also named a fellow of the Institute of Electrical and Electronics Engineers and of the American Physical Society, and inducted into several scholastic honorary societies: Eta Kappa Nu, Phi Kappa Phi, Sigma Xi, and Tau Beta Pi.

In August of 1981, Bell Labs selected George Dacey to become president of Sandia Corporation and director of the Sandia National Laboratories, where he served for six years. He immediately focused a major effort on developing advanced systems to protect the electronics of communications and military satellites against radiation effects from their continued passages through the Van Allen belts and to increase their survivability against other intense radiation attacks. He cross-pollinated the radiation effects research and development teams by exchanging personnel between Bell Labs and Sandia, which provided synergy, later thought to have been crucial, for raising both the capabilities and resiliency of both organizations for developing US electronics systems for many diverse applications. In those years, and since, it was clear that the US lead in research on radiation effects on advanced electronics technology systems was unsurpassed.

George brought a number of unique strengths to the management of Sandia, including his penchant for “big picture” thinking. He pushed Sandia to become a leader in planning future work efforts, promoting the greatest possible synergy among all the technologies and ensuring that future technical challenges got identified well before their solution became urgent. This emphasis on what we today call "strategic planning" grew to become a core competency at Sandia during George Dacey's tenure, and it remains a valuable asset for Sandia and the country. He also recognized the importance of raising the technology levels in every one of the mission elements of the labs, and he expanded the advanced scientific research, supporting technologies, and exploratory development efforts accordingly. During that period Sandia ramped up its "full solution" approach for engineering critical systems for the nation's defense needs and for civilian infrastructures.

George helped increase the emphasis on conventional weapons for the Department of Defense and military services, as well as advancing new energy technologies, as the Atomic Energy Commission evolved to become the US Department of Energy during George's tenure as Sandia's president. It was frequently recognized internally and externally that George had been truly placed "in the right place at the right time," and he knew how to advance a strategic advantage for maximum accomplishments and contributions.

In the latter years of his tenure at Sandia, George took note of the teaming with industrial suppliers that often accompanied the labs' request for new systems, such as advanced supercomputers or high-speed, radiation-resistant circuitry, and he began to try to build that approach as a normal part of the laboratory's role on behalf of the nation. He thus foresaw the possibilities for the multiprogram national laboratories for "bridging the gap" between knowledge-driven research at universities and commercial product development by industries. He began to stress the role of "demonstrating the feasibility of new products and developments" at the labs, which could then be shared with industrial entities, greatly lowering the risk, and lowering the costs for fielding working hardware systems. That germ of an idea has now grown to make Sandia the nation's top laboratory for industrial partnerships, advanced developments, and cooperative projects and programs.

After George retired in 1986 from his grand career(s), he was called on to serve on numerous corporate boards of directors, including Perkin-Elmer, W.R. Grace, and Milliken Industries, as well as on the United Way board and those of other charities.

From his birth in Chicago in 1921 to his retirement to Naples, Florida, in 1986 George Dacey lived an incredibly full and productive life. Throughout his life he did indeed exemplify the strategic intent that has long been the inspiration for all members of the Sandia National Laboratories: "to render exceptional service in the national interest." He died on November 27, 2010, survived by his wife, Anne Z. Dacey, and their two daughters, Donnie Hutcheson and Sarah Dacey Charles; their son, John C. Dacey, preceded his father in death.

George Dacey set an enviable record of advanced science and hard work, enormous patriotism, and senior leadership. He was a truly exceptional leader and manager of US advanced science and engineering.

His daughter Sarah wrote

> What you may not know about my father is that he had a love for the performing arts. He was an amateur actor for a short time while in graduate school at Caltech starring in "The Play's the Thing" at the Pasadena Playhouse. But it was his glorious tenor voice that I remember most growing up with him. He'd sit down at the baby grand piano in the living room and plunk through Nessun Dorma. Then he'd grab his Broadway songbook and call me over. "Come on, Sarah, let's sing through the duet in Porgy and Bess." I was 9 or 10 years old at the time. You could say my Dad was my first music teacher and I loved every minute of it. We would sing through everything from torchy love ballads to classical selections from Handel's Messiah. A young aspiring actress couldn't ask for a better education. Also, Dad used his voice to help pass the time on long car trips. During the 2-day journey to Hilton Head, Dad serenaded the whole family with story-song arias like "The Glory Road" or our favorite, "The Green-Eyed Dragon with the Thirteen Tails." But memories of Dad's singing were not always sublime. For instance, he would often jump up from the piano bench and storm into the

kitchen just as mother was making dinner, and blast out a high C. "Listen to this!" he'd chirp with delight. Whereupon we'd whine and cover our ears, "DAD! It's too loud!"

According to family lore, my grandfather, Clem Dacey, who was a famed professional singer in his day on the radio and in Vaudeville, urged my Dad to pursue singing professionally. My father, however, could not be persuaded from following his true passion, science. Father and son came to a compromise. My Dad could major in engineering as long as he also promised to take classes in opera at the university. He kept his promise and remained an ardent lover of the arts throughout his life. Ironically, it was his artistic gifts that were passed on to each of his children. His oldest daughter became an accomplished painter, his son a rock musician, and his youngest, myself, a professional actress in musical theater.

We will always remember my father for his brilliant scientific mind, passion for the arts, and resonant voice, which still rings in our hearts. I'll close with lyrics to a song that he learned from his father and then passed on to us. From "Wagon Wheels," we sing in remembrance:

> Wagon wheels, wagon wheels,
> Keep on a-turnin', wagon wheels.
> Roll along, sing your song.
> Carry me over the hill….
> There's a pasture at the end of the road.
> Wagon wheels, carry me home.