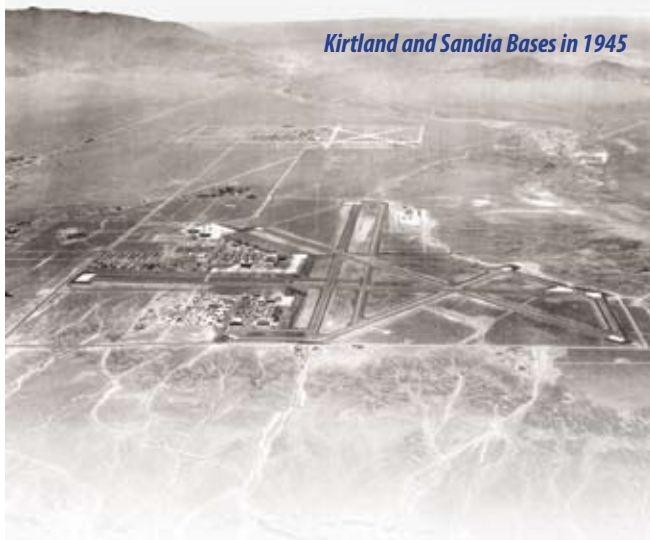


# Sandia National Laboratories

## *A History of Exceptional Service in the National Interest*



*Kirtland and Sandia Bases in 1945*

Sandia National Laboratories is one of the Department of Energy's (DOE) National Nuclear Security Administration laboratories. Sandia's precursor was Z Division, created in 1945 as the ordnance design, testing, and assembly arm of Los Alamos. The Division moved to Sandia Base outside of Albuquerque to be near an airfield and work closely with the military. In 1948, Z Division's growth prompted its designation as Sandia Laboratory, a separate branch of Los Alamos. On November 1, 1949, Sandia Corporation, a wholly owned subsidiary of Western Electric, began managing Sandia. In 1956, a second Sandia laboratory site was established in Livermore, California. Sandia was made a national laboratory by 1979 legislation. In 1993, Sandia Corporation became a Martin Marietta (now Lockheed Martin) company.

### **The following timeline highlights some of Sandia's achievements.**

- 1949** Given on-going responsibilities for stockpile surveillance. Provided surveillance personnel at the nation's nuclear weapon storage sites until 1960, when the introduction of sealed-pit weapons reduced the need for constant weapon maintenance.
- 1950s** Developed technologies for the wooden bomb—a weapon that could sit ready in the stockpile for years with little maintenance.
- 1956** Opened a new laboratory in Livermore, California.
- 1958** Shock-resistant components and parachute systems made possible the safe laydown delivery of nuclear bombs.
- 1960** Tonopah Test Range replaced the Salton Sea Test Base as the permanent range for field testing components and weapon designs.
- 1960** The science of terradynamics emerged from earth-penetrator design efforts.
- 1960** Introduced the Permissive Action Link to prevent unauthorized use of nuclear weapons.
- 1960** Laminar Flow Clean Room designed; the first in a long line of weapons spin-offs.
- 1962** Strypi rocket developed for the high-altitude Dominic nuclear test series.
- 1962** B61 design program to create a flexible, lightweight tactical thermonuclear weapon began. Its most recent modification, the B61-11, was introduced in 1997.
- 1962** Began work on an independently targeted warhead fully integrated with its reentry vehicle. The Navy subsequently contracted with Sandia for the Poseidon missile's Mark 3 reentry body.
- 1963** Vela satellites, with Sandia-designed optical sensors as well as data processing, logic, and power subsystems, launched to detect nuclear detonations.
- 1966** Helped locate the bomb lost in an aircraft collision over Palomares, Spain. Safety concerns prompted Sandia to establish an independent safety group to assess weapon designs.
- 1970** Designed the Safe Secure Trailer for transporting nuclear weapons; later designed and tested accident resistant containers for nuclear materials.
- 1972** Began anti-terrorism work—offering training and developing more formidable barriers to protect critical sites—which led to recent anti-terror technologies, including MicroHound™ for sniffing out faint concentrations of explosives.
- 1973** Responding to the energy crisis, began research on solar and wind technology, photovoltaics, enhanced fossil fuels recovery, and fusion development.



**1974** Named the technical advisor on the Waste Isolation Pilot Plant (WIPP); WIPP received first waste in 1999.

**1981** Combustion Research Facility opened at Sandia/California. It is available to researchers from around the world.

**1983** Contributed to the assessment of countermeasures and vulnerability of the Strategic Defense Initiative.

**1983** Published research on strained-layer superlattices, a new class of materials that allow scientists to tailor semiconductors to specific functions.

**1984** Factored the 69-digit Mersenne number as part of the effort to test and challenge weapon security codes.

**1991** Sandia-advanced synthetic aperture radar (SAR) used in Desert Storm. Capable of seeing through cloud cover, SAR was first studied at Sandia in 1986.

**1993** Received mission assignment for neutron generator production.

**1994** Cooperative Monitoring Center began hosting arms control specialists from around the world, informing them about available treaty-monitoring technologies.

**1996** The Sandia/Intel ASCI Red machine achieved 1.06 teraflops. Part of DOE's Accelerated Strategic Computing Initiative (ASCI) to leverage the power of massively parallel supercomputing to simulate nuclear testing for stockpile surveillance in the post-Cold War era, it remained the fastest computer in the world into 2000.

**1997** NASA's Pathfinder space probe arrived on Mars, its landing cushioned by airbags designed by a Sandia/Jet Propulsion Laboratory team.

**1998** Z machine briefly achieved an output of 290 trillion watts; by 2006 it had produced plasmas exceeding temperatures of 2 billion degrees Kelvin in fusion research experiments.

**1999** Received DOE approval to design the Microsystems and Engineering Sciences Application (MESA) facility. The largest construction project in Sandia's history, MESA will combine Sandia's expertise in weapon design, very fast computing, and microsystems into an advanced research environment.

**For more information, visit the Sandia National Laboratories web site at [www.sandia.gov](http://www.sandia.gov) or contact:**

Myra O'Canna, Corporate Archivist,  
(505) 844-6315 or [mlocann@sandia.gov](mailto:mlocann@sandia.gov)

Rebecca Ullrich, Corporate Historian,  
(505) 844-1483 or [raullri@sandia.gov](mailto:raullri@sandia.gov)

**2000** Work in microelectromechanical (MEMS) technology research expanded, pushing ever-smaller chip features to the atomic scale.

**2001** Sandia-developed decontamination foam used to neutralize anthrax in buildings on Capitol Hill.

**2002** The Sandia/NM Department of Health Rapid Syndrome Validation Project (RSVP) system to quickly detect disease outbreaks deployed in southern New Mexico.

**2003** Lightweight ultra-high-temperature ceramics (UHTCs) created in Sandia's Advanced Materials Laboratory; UHTCs can withstand temperatures up to 2000°C.

**2004** Introduced the shoulder-length, carbon-composite Sandia Gauntlets as a direct response to U.S. military needs in Iraq.

**2004** Distributed Information Systems Laboratory (DISL) dedicated at Sandia/California, providing a test-bed for new advanced technologies before they are deployed throughout the nuclear weapons complex.

**2005** Sandia/Los Alamos joint Center for Integrated Nanotechnologies (CINT) facility completed. BiNational Sustainability Laboratory (BNSL) opened in Santa Teresa, NM; sponsored by the U.S., Mexico, and State of New Mexico, the BNSL supports collaborative technical efforts.

**2006** Sandia/University of New Mexico experiments involving single-cell organisms in nanostructures placed on the International Space Station. Researchers are investigating the manner in which living cells placed in nanostructures apparently direct the creation of nanocompartments.

