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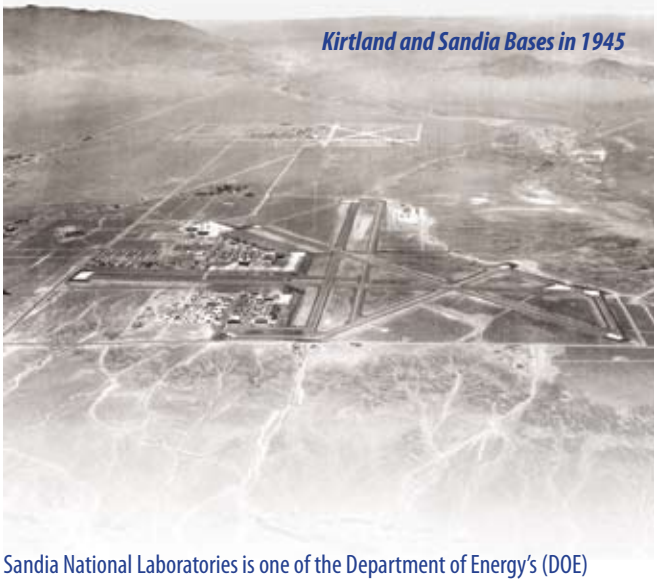
Sandia National Laboratories

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.

Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000. SAND No. 200?-????P.

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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.

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.

Strypi Rocket

ASCI Red

Sandia Gauntlets

For more information, visit the Sandia National Laboratories web site at www.sandia.gov or contact:

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