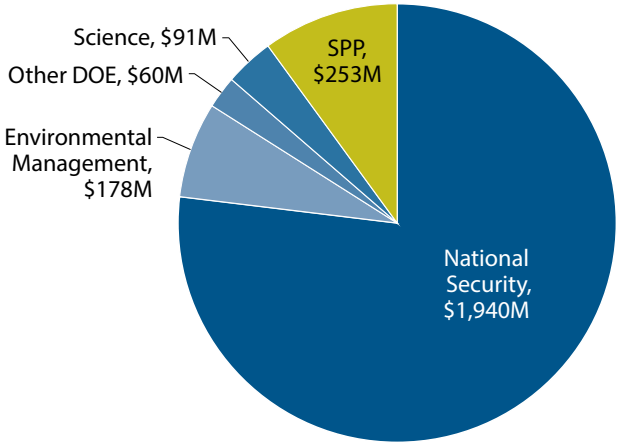
Los Alamos National Laboratory
At a Glance

U.S. DEPARTMENT OF ENERGY

As the Nation's premier national security science Laboratory, LANL applies innovative and multi-disciplinary science, technology, and engineering to help solve the Nation's toughest challenges and protect the Nation and world.

In delivering mission solutions, LANL ensures the safety, security, and effectiveness of the U.S. nuclear deterrent and reduces emerging national security and global threats. The multidisciplinary focus of the Laboratory's mission extends to nuclear nonproliferation, counterproliferation, energy and infrastructure security, and technology to counter chemical, biological, radiological, and high yield explosives threats.

FY 2016 Funding by Source



Lab operating costs: **$2,116M**
DOE/NNSA costs: **$1,878M**
SPP costs (non-DOE/non-DHS): **$253M**
SPP as % total Lab operating costs: **10.3%**
DHS costs: **$20M**

Facts

Location: Los Alamos, New Mexico
Type: National security Laboratory
Year Founded: 1943
Director: Charlie McMillan
Contractor: Los Alamos National Security LLC (LANS)
Responsible Site Office: Los Alamos Field Office

Physical Assets

22,400 acres and **1,280** buildings
9 million GSF in buildings
Replacement plant value: **$14.2B**
346,000 GSF in **100** excess facilities
385,000 GSF in leased facilities

Human Capital

11,300 full-time equivalent employees (FTEs)
375 postdoctoral researchers
1,100 students
1,228 facility users
582 visiting scientists

Core Capabilities

- Accelerator Science and Technology
- Advanced Computer Science, Visualization, and Data
- Applied Materials Science and Engineering
- Applied Mathematics
- Biological and Bioprocess Engineering
- Biological Systems Science
- Chemical Engineering
- Chemical and Molecular Science
- Climate Change Science and Atmospheric Science
- Computational Science
- Condensed Matter Physics and Materials Science
- Cyber and Information Sciences
- Decision Science and Analysis
- Earth Systems Science and Engineering
- Environmental Subsurface Science
- Large Scale User Facilities/ Advanced Instrumentation
- Mechanical Design and Engineering
- Nuclear Engineering
- Nuclear Physics
- Nuclear and Radio Chemistry
- Particle Physics
- Plasma and Fusion Energy Science
- Systems Engineering and Integration

Mission Unique Facilities

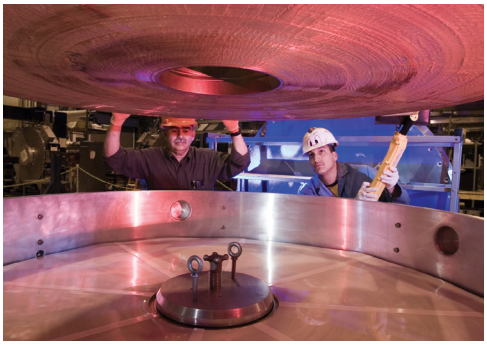
- Dual-Axis Radiographic Hydrodynamic Test Facility
- Plutonium Science and Manufacturing Facility
- Los Alamos Neutron Science Center
- Metropolis Center for Modeling and Simulation
- Center for Integrated Nanotechnologies
- Electron Microscopy Lab
- National High Magnetic Field Laboratory
- Nonproliferation & Internal Security Facility
- Trident Laser Facility
- SIGMA Complex for Materials Manufacturing and Machining
- Center for Explosives Science

Los Alamos NATIONAL LABORATORY

Los Alamos National Laboratory
Accomplishments

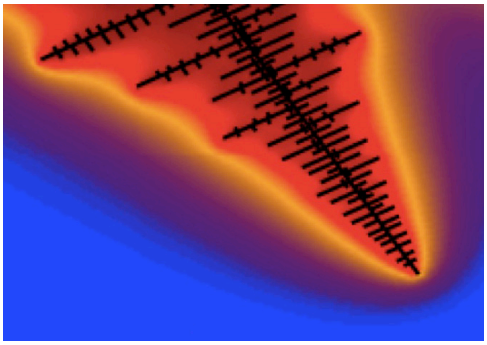
U.S. DEPARTMENT OF ENERGY

Unique Facility
Advanced Technology for National Security



LANL houses mission-essential facilities that ensure the safety, security, and effectiveness of the Nation's nuclear deterrent in the absence of testing, including the DARHT facility and one of world's fastest supercomputers, Trinity. DARHT, the world's most powerful x-ray machine, analyzes nuclear weapons mockups. The facility produces freeze-frame radiographs of materials imploding at speeds greater than 10,000 miles an hour, freezing the action of an imploding mockup to less than a millimeter, and providing 3D information. The Trinity supercomputer, at 40 petaflops, is the first platform large and fast enough to begin to accommodate 3D, full-scale, end-to-end weapons simulations. By combining Trinity's 3D modeling and DARHT's experimental data, LANL enhances the confidence and credibility of the Nation's nuclear deterrent.

Research Highlight
Predicting Materials Properties and Performance



By coupling experimental and modeling approaches in materials science, LANL is developing an integrated predictive process, structure, property, and performance capability that optimizes manufacturing processes and ensures performance. For example, LANL routinely uses casting simulations to guide manufacturing processes supporting stockpile stewardship. By adding a microstructural model to the code (TRUCHAS), researchers can predict microstructure variations in a casting. Proton radiography experiments then validate the predicted macroscopic fluid flow and solidification behavior. Ex-situ characterization validates the microstructural models. With these integrated capabilities, LANL is developing the ability to predict materials properties and performance, including aging phenomena, and modifying this capability to address new technologies such as additive manufacturing.

Technology to Market Highlight
Innovation in Oil Flow Measurements

Like many LANL innovations, technology leading to the Safire multiphase flow meter originated in national security work. LANL developed swept frequency acoustic interferometry to noninvasively identify static liquids (chemical warfare agents) inside sealed containers. LANL teamed up with Chevron Energy Technology Corporation and General Electric (GE) to adapt the technology to multiphase fluids (oil, water, and gas) in motion within pipes. The resulting simple-to-use Safire meter provides noninvasive, continuous, and accurate estimates of fluid production for wells, resulting in better reservoir management, improved production, and huge cost savings by eliminating environmentally unsafe separations tanks. Chevron has begun installing and evaluating meters in its oil fields, and GE is marketing the meters internationally.