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Welcome to Los Alamos National Laboratory

Nina D. Rosenberg

Program Director, Nuclear Nonproliferation and Security

October 2016

LANL is a National Nuclear Security Administration (NNSA) Laboratory within the U.S. Department of Energy (DOE)

Office of Science Laboratories

- 1 Ames Laboratory
Ames, Iowa
- 2 Argonne National Laboratory
Argonne, Illinois
- 3 Brookhaven National Laboratory
Upton, New York
- 4 Fermi National Accelerator Laboratory
Batavia, Illinois
- 5 Lawrence Berkeley National Laboratory
Berkeley, California
- 6 Oak Ridge National Laboratory
Oak Ridge, Tennessee
- 7 Pacific Northwest National Laboratory
Richland, Washington
- 8 Princeton Plasma Physics Laboratory
Princeton, New Jersey
- 9 SLAC National Accelerator Laboratory
Menlo Park, California
- 10 Thomas Jefferson National Accelerator Facility
Newport News, Virginia

Other DOE Laboratories

- 1 Idaho National Laboratory
Idaho Falls, Idaho
- 2 National Energy Technology Laboratory
Morgantown, West Virginia
Pittsburgh, Pennsylvania
Albany, Oregon
- 3 National Renewable Energy Laboratory
Golden, Colorado
- 4 Savannah River National Laboratory
Aiken, South Carolina

NNSA Laboratories

- 1 Lawrence Livermore National Laboratory
Livermore, California
- 2 Los Alamos National Laboratory
Los Alamos, New Mexico
- 3 Sandia National Laboratory
Albuquerque, New Mexico
Livermore, California

Nuclear Security Enterprise

1. Kansas City Plant

2. Lawrence Livermore National Laboratory

3. Los Alamos National Laboratory

4. Nevada National Security Site

5. Pantex Plant

6. Sandia National Laboratories

7. Savannah River Site

8. Y-12 National Security Complex

We are in northern New Mexico, 35 miles from Santa Fe

LANL's mission is aligned with DOE and NNSA

DOE mission areas:

- National Security
- Science
- Energy
- Environmental Management

Ernest Moniz
Secretary of Energy

The role of National Labs:

- DOE is a powerhouse of national science and technology
- National labs are principal agents of execution on missions of national importance
- Focus is on public service

NNSA Commitments:

- Sustain the nuclear weapons stockpile
- Conduct leading-edge scientific research
- Help prevent nuclear materials from falling into the hands of terrorists
- Support the Navy's nuclear reactor program
- Repair and modernize our aging infrastructure
- Protect the safety and security of our sites, employees, and the public

Frank G. Klotz
NNSA Administrator

The Los Alamos mission is to solve national security challenges through scientific excellence

GOALS

Deliver national nuclear security and broader global security solutions

and

Foster excellence in science and engineering disciplines essential for national security missions

by

Attracting, inspiring and developing world-class talent to ensure a vital future workforce

and

Enabling mission delivery through next-generation facilities, infrastructure, and operational excellence

Los Alamos National Laboratory Director Charlie McMillan and Energy Secretary Ernest Moniz

We are managed by Los Alamos National Security, LLC

Managed and operated by the
University of California
1943 to 2006

AECOM

BWXT
BWX Technologies, Inc.

Now managed by Los Alamos
National Security (LANS), LLC
2006 to present

Work at LANL is organized under five lines of business

Director's Office

Charlie McMillan
Director

Rick Kacich
Deputy Director

Dave Lyons
Executive
Director

Principal Associate Directors

Alan Bishop

*Science, Technology, and
Engineering*

Bob Webster

Weapons Programs

Terry Wallace

Global Security

Craig Leasure

Operations and Business

Larry Simmons

Capital Projects

The Lab's FY16 budget was nearly \$2.5B

LANL's unique infrastructure supports both our Nuclear Weapons Program and our Global Security Mission

Metropolis Center for Modeling & Simulation

High Explosive Laboratories

Los Alamos Neutron Science Center

Plutonium Processing Facility (TA-55)

SIGMA Building

Dual Axis Radiographic Hydrotest Facility

Chemistry and Metallurgy Research (CMR) Building

Radiological Laboratory Utility Office Building (RLUOB)

- ~40 square miles
- 47 technical areas
- 8.2 million ft² under roof
- 1,000 buildings
- 13 nuclear facilities
- 268 miles of road

We have a large, highly-educated workforce

Total employees, 10,500 including:

- LANS, 6,850
- Students, 1,100
- Unionized craft workers, 880
- Contractors, 400
- Protective Force, 300
- Post doctoral researchers, 350

66% of degrees for LANS employees:

- 28% undergraduate
- 17% master's
- 21% PhD

LANL's capabilities are essential to the U.S. nuclear deterrent

Los Alamos helps ensure the safety, security, and reliability of the nation's deterrent

We use science-based stockpile stewardship to annually assure the Secretary of Energy, Secretary of Defense, and the President that the stockpile is safe, secure and reliable

Non-nuclear testing, modeling, simulation, and other tools and capabilities provide assurance

Modern stockpile stewardship relies on intellectual, experimental, computational, and engineering strengths at Los Alamos instead of nuclear explosive tests

Stockpile Stewardship in the last century

Stockpile stewardship today

Dual-Axis Radiographic Hydrotest facility (DARHT)

Nuclear material facilities

Supercomputing

Los Alamos has a broad national security mission that includes much more than stockpile stewardship

LANL's Global Security Program spans the entire Nuclear Threat spectrum

The NNS Program focuses on preventing nuclear proliferation and enhancing nuclear security

Los Alamos trains and supports the IAEA

Every new IAEA inspector since 1980 comes to Los Alamos for training

National Public Radio story

SCIENCE

How Do You Find Plutonium? Go To Nuclear Inspector School

October 19, 2015 · 4:25 AM ET
Heard on Morning Edition

Los Alamos has pioneered a wide range of IAEA measurement tools in use today and continues to innovate with new technology

Los Alamos experts have played key roles in the planning and execution of CTBTO exercises

Los Alamos scientist Ward Hawkins was the Chairman of the Scenario Development Group for CTBTO's Integrated Field Exercise 2014 (IFE14)

Los Alamos works globally to improve nuclear security

Support training activities

Los Alamos teams were on-site in Beijing to facilitate set-up and commissioning of the NDA equipment in the Analytical Laboratory building of the China Center of Excellence (COE) on Nuclear Security.

Reduce global supplies of HEU, Pu
Researchers from LANL and JAEA completed first joint criticality experiment at the NCERC.

Recover radioactive sources

The Off-Site Source Recovery (OSRP) team successfully completed a recovery of 3 Husman irradiators (56,000 Ci of ^{137}Cs) from southern Mexico.

Secure borders

Install fixed and mobile radiation detection systems around the world

ARIES supports disassembly of Pu components & their conversion to oxide for use in MOX fuel or dilution & disposal

Plutonium Facility at Los Alamos

Los Alamos develops and applies science and technology to benefit nuclear detonation detection missions

Space-based nuclear detonation detection

Nevada Familiarization Activity at NNSS, 2016

Ground-based nuclear detonation detection

Source Physics Experiment

Los Alamos laser for detecting nuclear material on Earth goes to Mars to determine habitability

- **Laser-Induced Breakdown Spectroscopy (LIBS) was a Laboratory-Directed Research and Development (LDRD) project to look for material within gloveboxes at LANL's plutonium facility**
- **A backpack LIBS unit has been developed for consideration by the IAEA**
- **LIBS is the basis for the ChemCam laser unit on the current Mars Curiosity rover; the next-generation SuperCam instrument has been selected for the Mars 2020 mission, which endeavors to pave the way for human visitation to the Red Planet**