Los Alamos
NATIONAL LABORATORY

LANL Mission and Unique Qualities

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2023 NSSC Fall Workshop

Berkeley, CA

October 17, 2023

NNSA
National Nuclear Security Administration

80 years serving the nation

- In 1943, Los Alamos National Laboratory was founded with a single, urgent purpose: to build an atomic bomb
- Today, LANL focuses on maintaining a strategic nuclear deterrent to protect the nation's security
- Our workers, facilities, and instruments:
  - Detect nuclear weapons and improvised devices
  - Promote cooperation and diplomacy
  - Limit nuclear arms and the spread of nuclear materials, technology, and expertise

LANL is an FFRDC* managed by Triad National Security

University of California

1943 to 2006

Los Alamos National Security, LLC

2006 to 2018

2018 +

TRIAD National Security, LLC

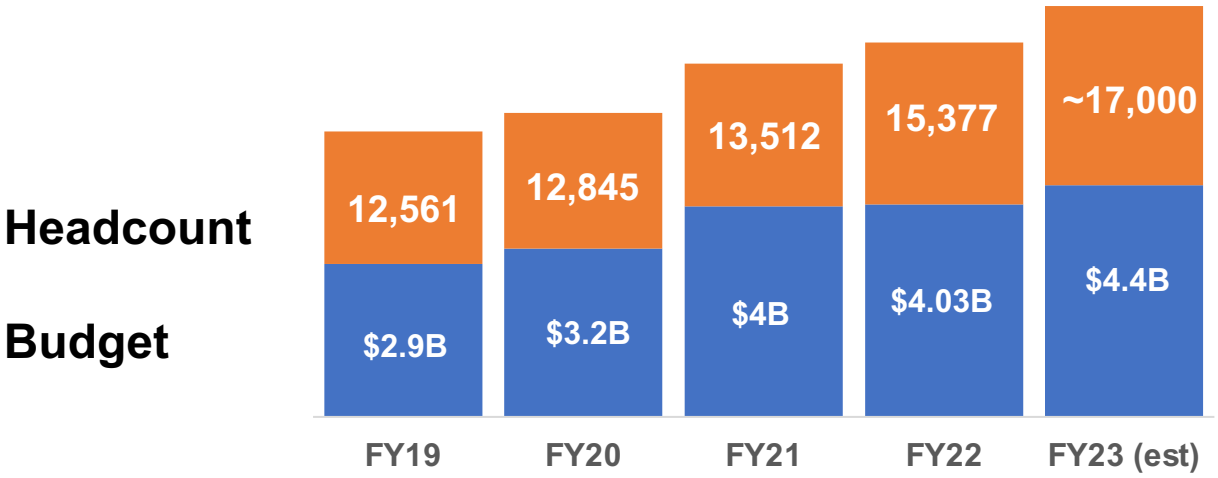
BATTELLE

THE TEXAS A&M UNIVERSITY SYSTEM

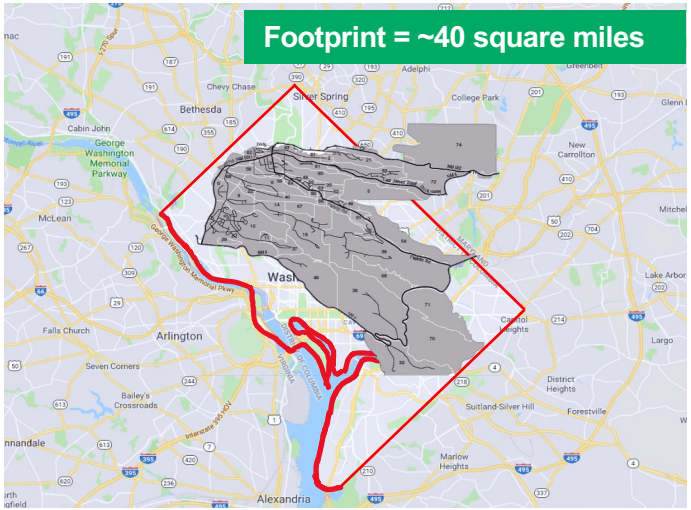
UNIVERSITY OF CALIFORNIA

*Federally Funded Research & Development Center

Our strong growth reflects an important mission



Our large campus is size of Washington DC and includes many unique facilities which can serve as testbeds



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) Bldg.


CMR Replacement (CMRR) Building


Water Canyon Test Site

Our Core Mission continues to be Nuclear Deterrence

- Ensure safety, reliability, and performance of U.S. nuclear stockpile
- Design for most of the nation's on-alert deterrent
- Significant and growing production responsibilities: detonators, heat sources, Pu pits

Los Alamos uses scientific assessment, experimentation & modeling to assess and certify the stockpile, which has aged significantly since it was first developed and since the conclusion of full-scale testing.

Modeling & Simulation

Specialized Experiments

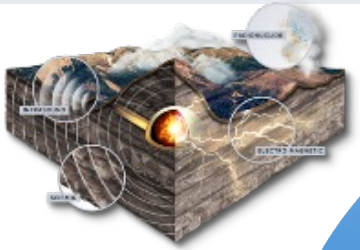
US Navy W76-1, W76-2, W88 Alt 370 & 940

US Air Force B61-12, W78

Supercomputing

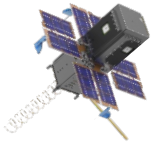
DARHT – Dual Axis X-Ray

Our national security mission today is much broader than nuclear deterrence



Nuclear Nonproliferation & Security

Nuclear Counterterrorism & Counter Proliferation



National Security & Defense

Intelligence & Emerging Threats

Our nuclear nonproliferation and security portfolio includes R&D, deployment activities, and policy support

LA-UR-21-20989

2022 ANNUAL REPORT

LOS ALAMOS NATIONAL LABORATORY

Nuclear Nonproliferation and Security Program Office

Los Alamos NATIONAL LABORATORY

Science, Nonproliferation, Plutonium, and Mars

The **ChemCam** laser unit on the Mars Curiosity rover is based on Laser-Induced Breakdown Spectroscopy (LIBS), which started as an LDRD project to look for material within gloveboxes at LANL's Pu facility.

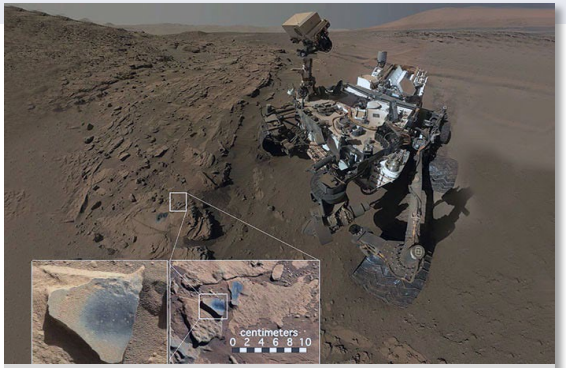
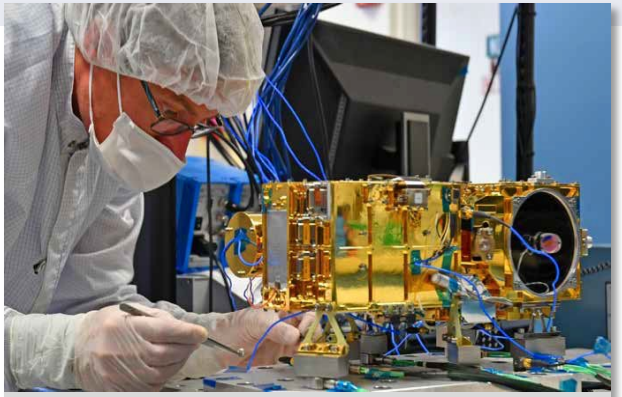


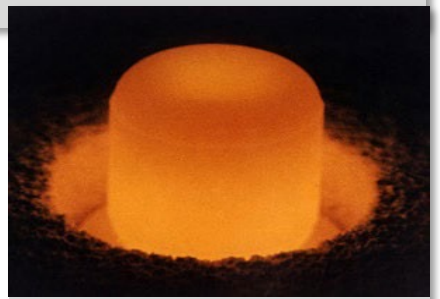
Image credit: NASA

ChemCam-enabled discoveries tell us about possible early Martian atmosphere



Next-generation **SuperCam** instrument on Mars 2020 mission

A **backpack LIBS unit** has been developed for environmental sampling



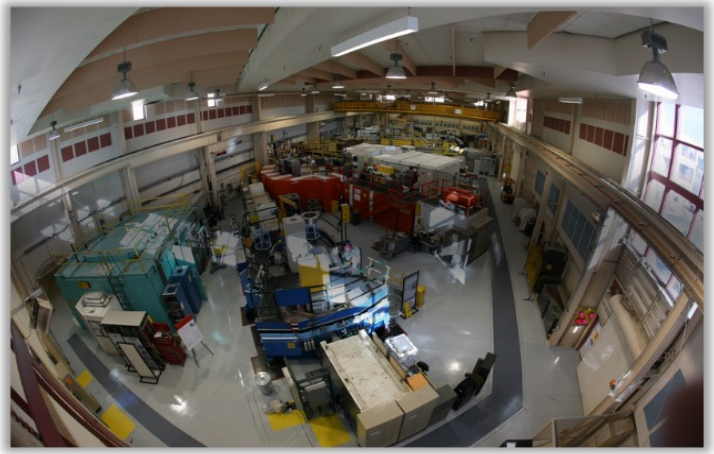
Mars missions are powered by Pu-238 heat sources produced at Los Alamos

New Mexico:
The Land of Enchantment

What does LANL provide to the IUP?

- Keepin Nonproliferation Summer School
- Unique experimental facilities
  - NCERC / DAF – experiments on large quantities of SNM
    - https://www.nnss.gov/pages/facilities/NCERC.html
    - https://www.nnss.gov/pages/facilities/DAF.html
  - LANSCE – neutron and proton science
    - https://lansce.lanl.gov/
  - DAHRT – explosives research
    - https://www.lanl.gov/science-innovation/science-facilities/DARHT/
  - Sigma – manufacturing (including AM) using various metals and non-metals
    - https://www.lanl.gov/org/ddste/aldps/sigma/index.php
- High-performance computing
- Subject-matter experts

Student holding the BeRP Ball (4.5 kg sphere of α-phase weapons-grade Pu) at the NCERC.



LANSCE's Lujan Center