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Title: Los Alamos- A National Security Laboratory for the Nation
A discussion with Community Leaders

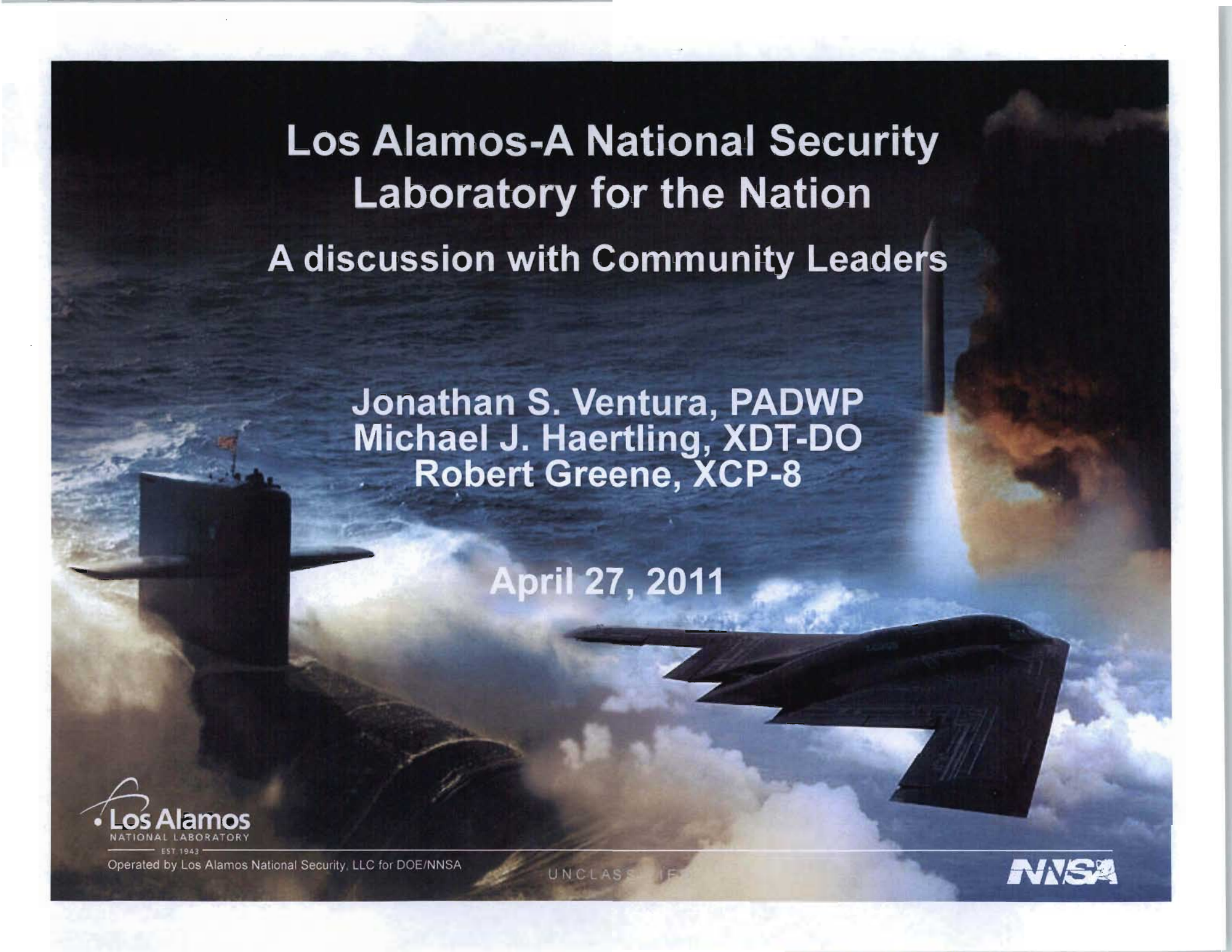
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Intended for: Community Leaders
April 27, 2011



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Attached is a slide presentation on LANL's nuclear weapons program for community leaders from Los Alamos and surrounding counties.



Los Alamos-A National Security Laboratory for the Nation

A discussion with Community Leaders

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April 27, 2011



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ADLES
Biology

AGE
Accelerator Operations & Technology

ADLES
Materials Physics & Applications

ADIT
Departmental Computing Services

ADTSC
Computer & Computational Sciences

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Applied Engineering & Technology

Earth & Environmental Sciences
Prototype Fabrication

Los Alamos Neutron Science Center

Network Infrastructure and Engineering

Software and Applications Engineering

Theoretical
Physics

Laboratory Directed Research & Development Program Office

Science & Technology Base

Science Program Office

Technology Transfer

LANS Institutes

Plutonium Science & Manufacturing
Assoc. Director: Carl Beard

ADPM
Integrated Program Management

Nuclear Component Operations

Manufacturing Engineering and Technology

Nuclear Process Infrastructure

Weapons
Assoc. Director: Bret Knapp

ADW
Computational Physics

Theoretical Design

Weapons Experiments

Weapons Systems Engineering

Threat Identification and Response
Assoc. Director: Scott Gibbs

PADGS
Decision Applications

International & Applied Technology

International, Space, & Response

Nuclear Nonproliferation

Business Services
Assoc. Director: Mark Barth

ADBS
Acquisition Services

Central Training

Human Resources

Information Resource Management

Quality Assurance

Radiation Protection

Waste and Environmental Services

Environmental Safety Health & Emergency Resources

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Environmental Protection

Industrial Hygiene and Safety

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ADMS
Infrastructure Planning

Maintenance & Site Services

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Hazard Protection Division

Institutional Facilities & Control Services Operations

LANS/LLC Facility Operations

Operations Support

Safety Base

Science & Technology Facility Operations

TA-21 Facility Operations

TA-55 Facility Operations

Utilities & Infrastructure Facility Operations

Weapons Facility Operations

Nuclear & High Hazard Operations
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ADNHQ
CMR Facility Operations

Engineering Services

Environmental & Waste Management Facility Operations

Hazard Protection Division

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Science & Technology Facility Operations

TA-21 Facility Operations

TA-55 Facility Operations

Utilities & Infrastructure Facility Operations

Weapons Facility Operations

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ADSS
Emergency Operations

Safeguards

Security

Environmental Programs
Assoc. Director: Michael Graham

ADPP
Business & Project Services Division

Corrective Actions

Engineering & Technology

Regulatory Management

TA-21 Closure

TA-55 Closure

Waste Repatriation

Project Management
Assoc. Director: John Brestak (Acting)

ADPM
CMRR

Site Projects

Project Functions

04/05/11

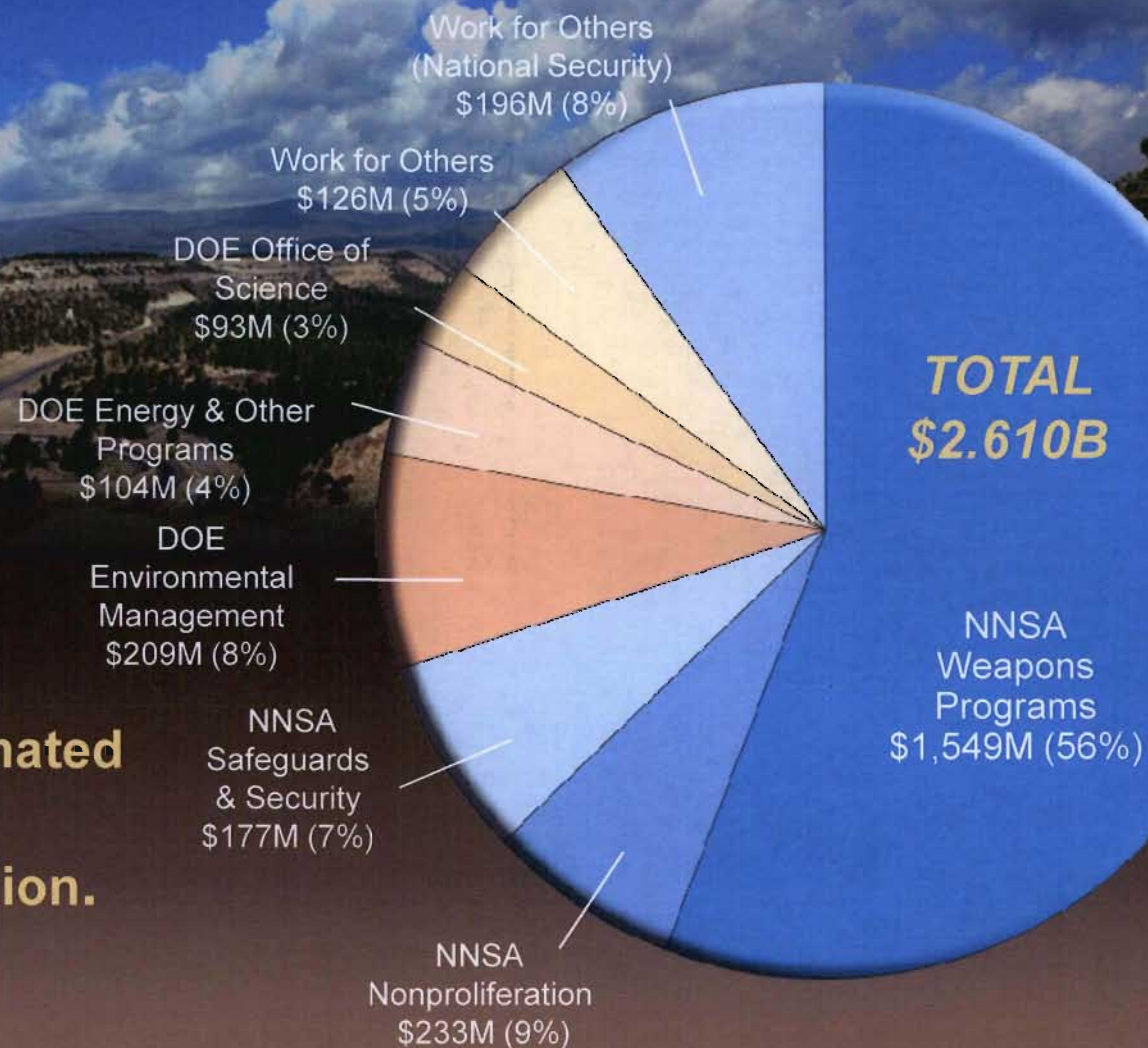
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NATIONAL LABORATORY
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NNSA

**The Laboratory's estimated
FY11 annual budget is
approximately \$2.6 billion.**



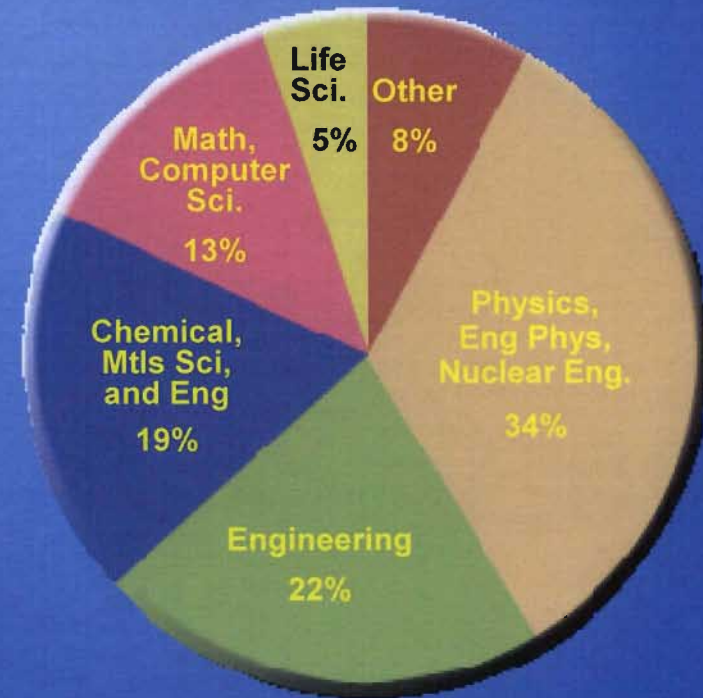
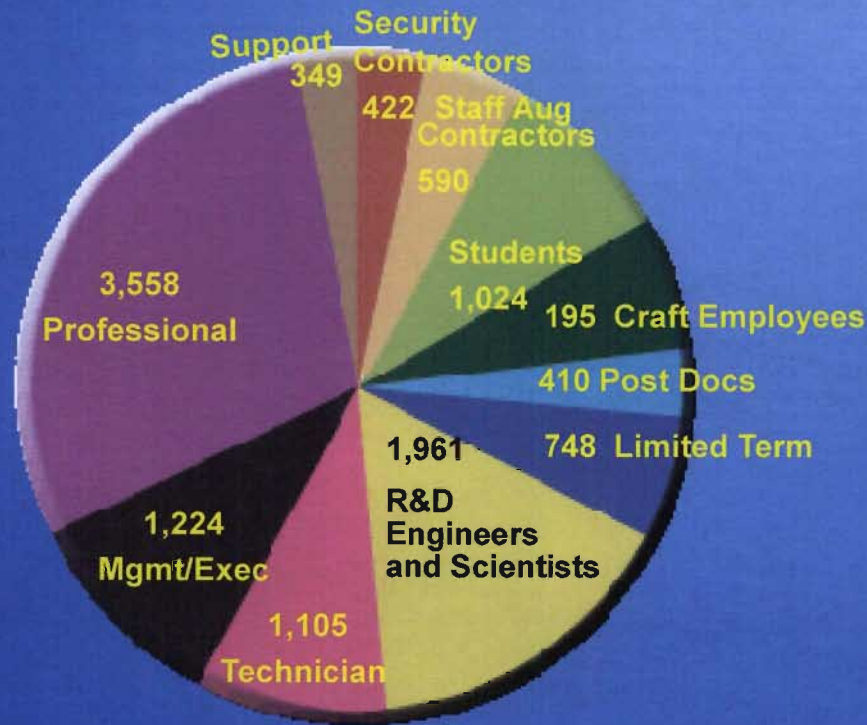
**FY 11 request begins to redress serious funding shortfalls
of the past decade**

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LANL is: Broad and Deep Science



R&D Scientist and Engineer Disciplines

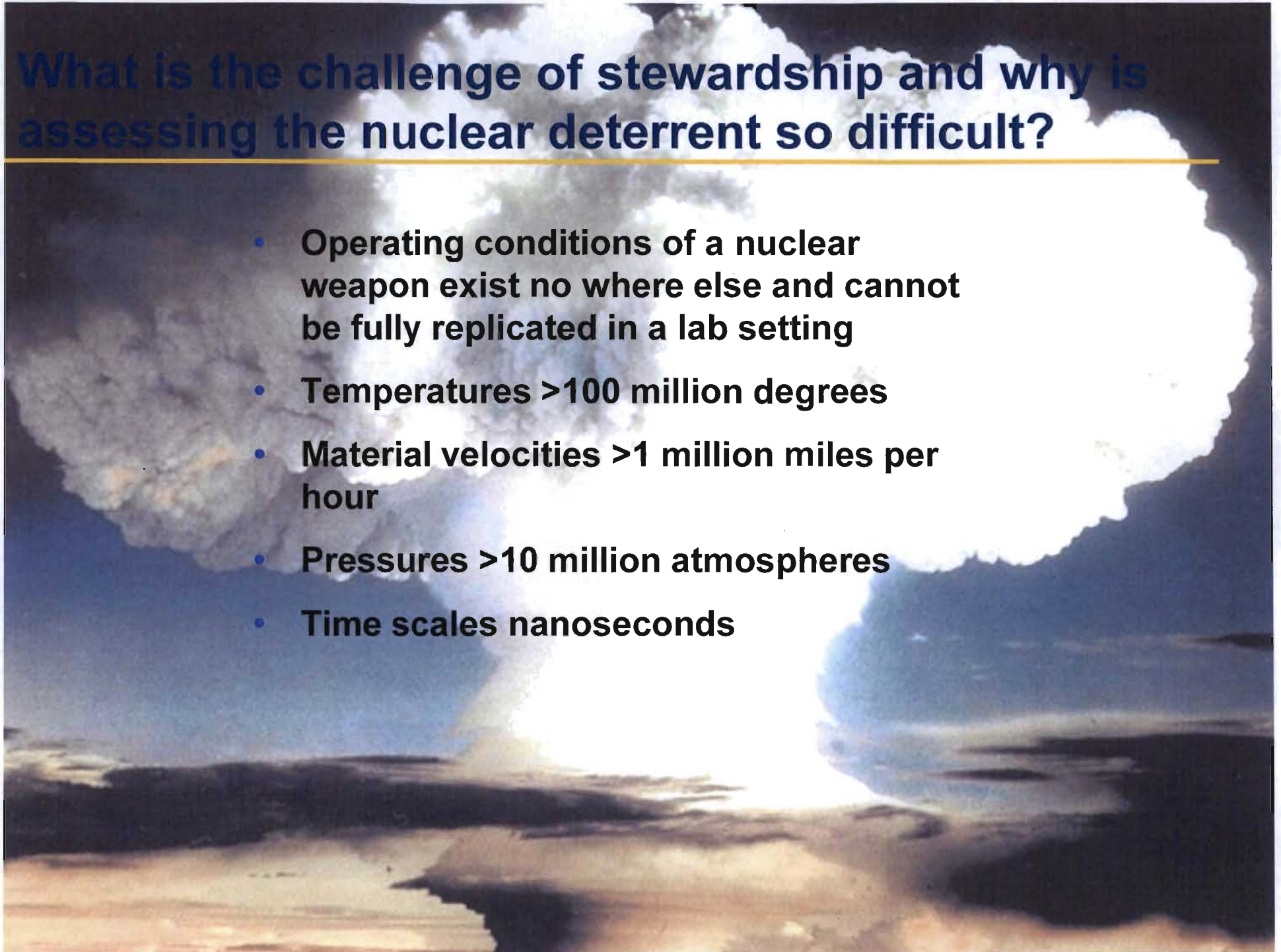
12,182 - Current Work Force

- Drawn from across the nation
- 2,256 PhDs
- More than 28% of career workforce started as students or post docs

Our people make Los Alamos great!

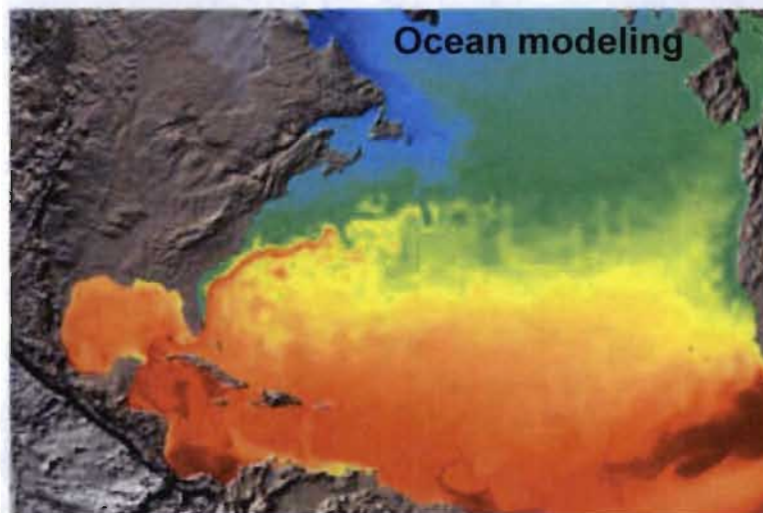
What is the challenge of stewardship and why is assessing the nuclear deterrent so difficult?

- **Operating conditions of a nuclear weapon exist nowhere else and cannot be fully replicated in a lab setting**
- **Temperatures >100 million degrees**
- **Material velocities >1 million miles per hour**
- **Pressures >10 million atmospheres**
- **Time scales nanoseconds**



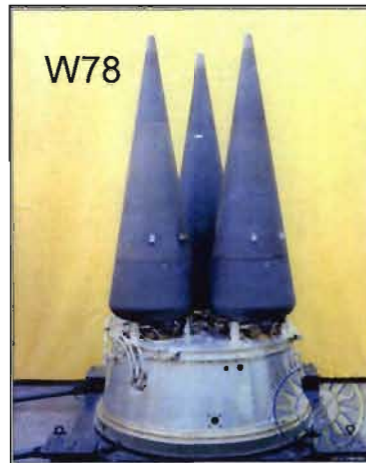
Los Alamos provides science and engineering solutions to the Nation's security issues

- **Stockpile Stewardship is core mission**
- **Lab's tools also address other national priorities**
- **Technologies to reduce national security threats**
- **Solutions to challenges of energy security**



LANL is the design laboratory for the majority of the Nation's deterrent

- LANL is the design laboratory for:
 - W76 SLBM
 - W88 SLBM
 - B61 Gravity bomb
 - W78 ICBM
- Each Triad leg offers complimentary and reinforcing benefits



LANL maintains a carefully balanced three part weapons program to sustain the Nation's deterrent

- **Stockpile management**
 - B61 Life Extension Program (LEP)
 - Support to plants on W76 LEP
 - Complete build of W88 pits begin work on W87 pits
- **Science, technology and engineering investments**
 - Use science tools to generate data to support assessment and resolve stockpile issues
- **Infrastructure investments**
 - Create modern, state-of-the-art facilities to sustain laboratory capabilities
 - Hire and train next generation



LANL's unique science and engineering infrastructure a critical component of U.S. deterrent



Metropolis Center for Modeling & Simulation



High Explosive laboratories



Los Alamos Neutron Science Center



Plutonium Processing Facility



Chemistry and Metallurgy Building



Dual Axis Radiographic Hydrotest Facility



SIGMA Building



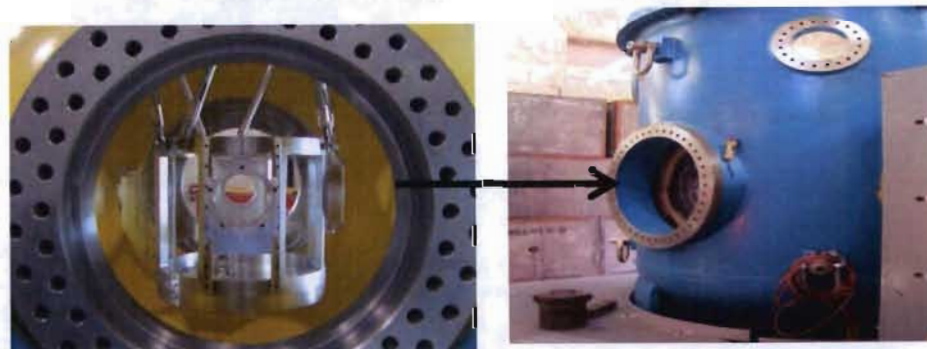
Chemistry & Metallurgy Research Replacement (RLUOB)

DARHT world class imaging in support of the deterrent

- World class X-ray radiography for non-nuclear hydrodynamic tests
- Axis 1 single image, operational since 1999
- Axis 2 up to four images operational 2009
- World's first dual axis experiment December 2009
- 4 large scale dual axis hydros 2010
- Experiments fully contained to reduce environmental impacts and increase shot rate



DARHT Containment System



Supercomputing critical to Stewardship and other scientific missions

- Stockpile challenges are increasingly complex as systems continue to age
- DARHT, LANSCE etc provide large data sets to resolve stockpile challenges
- Data sets require ever more capable machines that can quickly process information
- Road Runner world's first machine to operate at 1.105 petaflops (million billion calculations per second)
- Cielo coming on line Feb 2011@ 1.1 petaflops upgrade to 1.35 in summer 2011



TA-55 the Nation's center of plutonium science and manufacturing



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CMRR will provide 21st century actinide science capabilities supporting a variety of national security missions

- Phase 1 of CMRR—RLUOB completed on time/budget
- Phase 2 (equipment install) underway on schedule and budget
- CMRR will support a broad range of LANL activities including:
 - non-proliferation/IAEA training
 - nuclear energy R&D
 - space power
 - homeland security
- CMRR NF will improve site security and allow for SNM consolidation
- CMRR NF adds @ 20,000 square feet of Cat I/2 lab space to support operations in PF-4
 - Analytical chemistry
 - Actinide R&D
 - Materials characterization
 - Vault storage



Annual Assessment– A statutory requirement and the highest priority of the Lab Director

- Detailed reports are prepared by lab staff on each warhead
- Lab Director briefed in detail by staff
- Lab Director issues letter to Secretaries of Defense & Energy and Chair of the NWC
- Lab Director briefs the Secretary of Energy
- STRATCOM prepares separate report and briefs the Secretary of Defense
- Secretaries of Defense & Energy brief the President
- President advises Congress



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LANL's expertise in high explosives is being applied to the IED problem

- Intensive 3 day course to learn how to detect, identify, and characterize a variety of improvised explosive compounds
- Training began in 2009
- The program is funded by DoD
- 100s war fighters have been trained



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2010 a year of significant accomplishment for the Los Alamos National Laboratory

- DIR testified before 2 Senate committees on new START
- 14th Annual assessment completed
- Successfully executed 4 DARHT hydro shots
- Operating Road Runner in secure environment
- Installed Cielo supercomputer in SCC
- Supporting plants on W76-1 build
- Initiated 6.2/2A study on B61 LEP
- Conducting subcritical experiments in Nevada
- Completing build of W88 WR pits to support US Navy
- Completed RLUOB construction outfitting ahead of schedule and under budget
- Selective hiring underway in XTD,XCP,SMS,W divisions
- Established Metropolis Post Doctoral fellowship program
- Awarded 5 R&D 100 awards bringing LANL's total to 117



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