

Lawrence Livermore National Laboratory

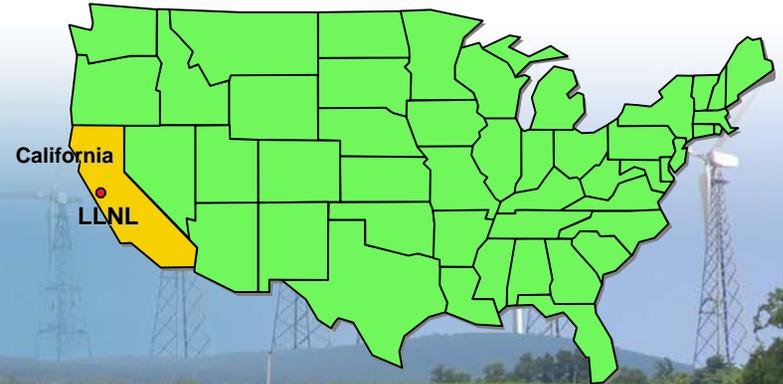
Pre Solicitation Conference
NNSA Source Evaluation Board

May 23, 2006

David H. Crandall



Livermore, California





Physical Attributes of LLNL's Site



- Total gross square feet – approximately 7.4 million (677 facilities)
- Total replacement plant value – approximately \$4.3 billion
- Maintenance backlog – approximately \$300 million
- Current maintenance budget stabilizes the backlog
- Nuclear facilities – 7



Experimental Test Site
(11 square miles)
near Tracy, California

Livermore Main Site –
1.2 square miles

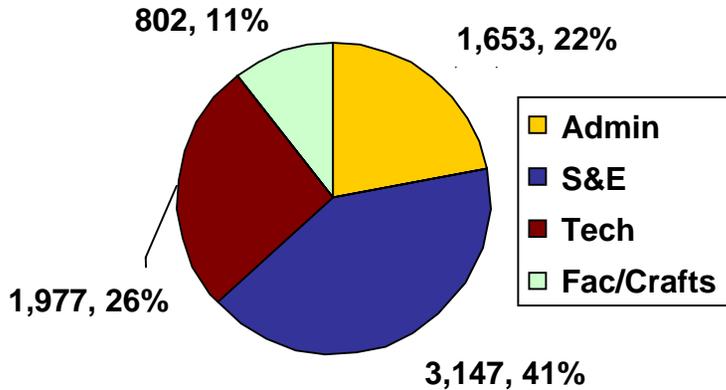




Current LLNL Workforce



Current Workforce Core UC (career and flex-term) Total 7,579

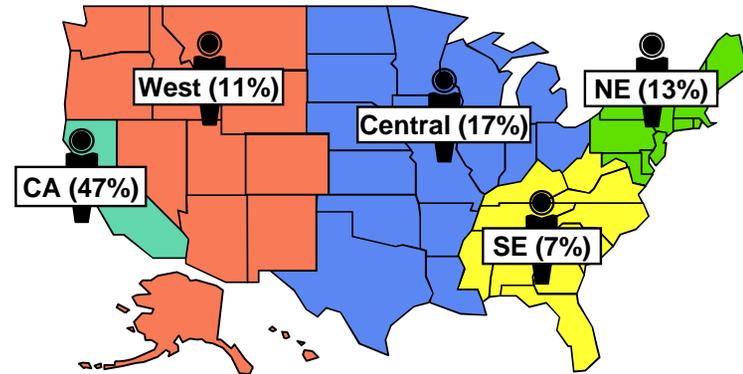


Students

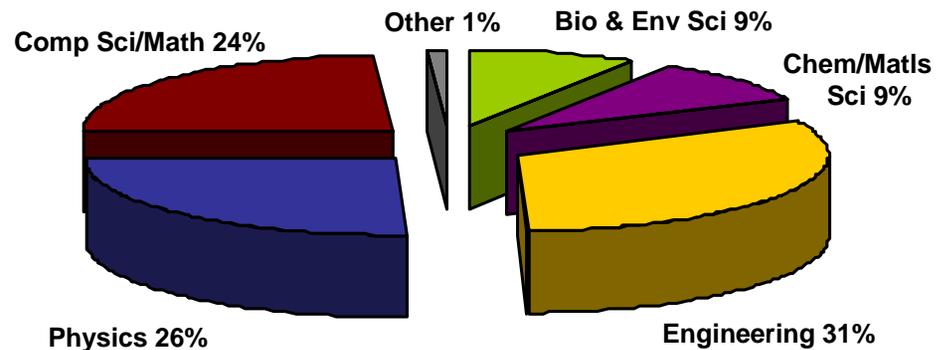
• Grad	66
• Undergrad/Temp Appts.	222
• HS Co-op	6
Total	294

Post Docs 145

Scientific & Engineering Staff Members From 383 Campuses



Technically Diverse, S&E Workforce





National Nuclear Security Administration



Vision: Provide the nation an integrated nuclear security complex, consisting of R&D, engineering, test, and production facilities that operates a NNSA capability that is recognized as preeminent in personnel, technical leadership, planning, and program management.

Defense Program Mission: To strengthen and support United States' security through nuclear deterrence by the capability to:

- Maintain a safe, secure, reliable and effective nuclear weapons stockpile.
- Maintain a flexible, responsive, robust nuclear weapons complex to address new challenges.
- Execute R&D and test activities to support U.S. leadership in science and technology.
- Work with the Department of Defense to transform the cold war stockpile to meet the needs of the 21st century.



Address the Proliferation Threat in All of Its Dimensions



Nuclear Nonproliferation Mission: detect, prevent, and reverse the proliferation of weapons of mass destruction (WMD), while mitigating the risks from nuclear operations.

Conducts cutting-edge nonproliferation and national security research and development;

Secures nuclear materials, nuclear weapons, and radiological materials at potentially vulnerable sites in Russia and elsewhere;

Removes vulnerable materials worldwide;

Reduces quantities of nuclear and radiological materials;

Bolsters border security overseas;

Supports international nonproliferation and export control regimes;

Downsizes the nuclear weapons infrastructure of the former Soviet Union; and

Mitigates risks at nuclear facilities worldwide.





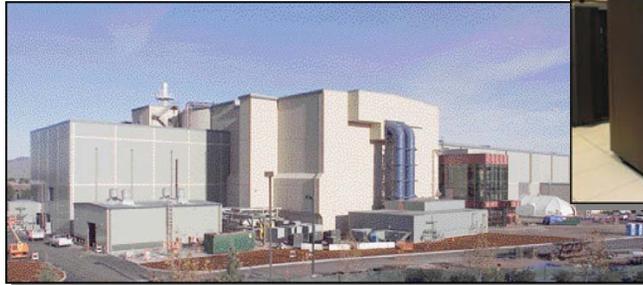
Stockpile Stewardship R&D Strengthening Science-Based Methods



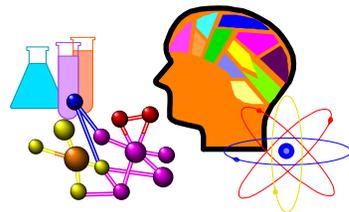
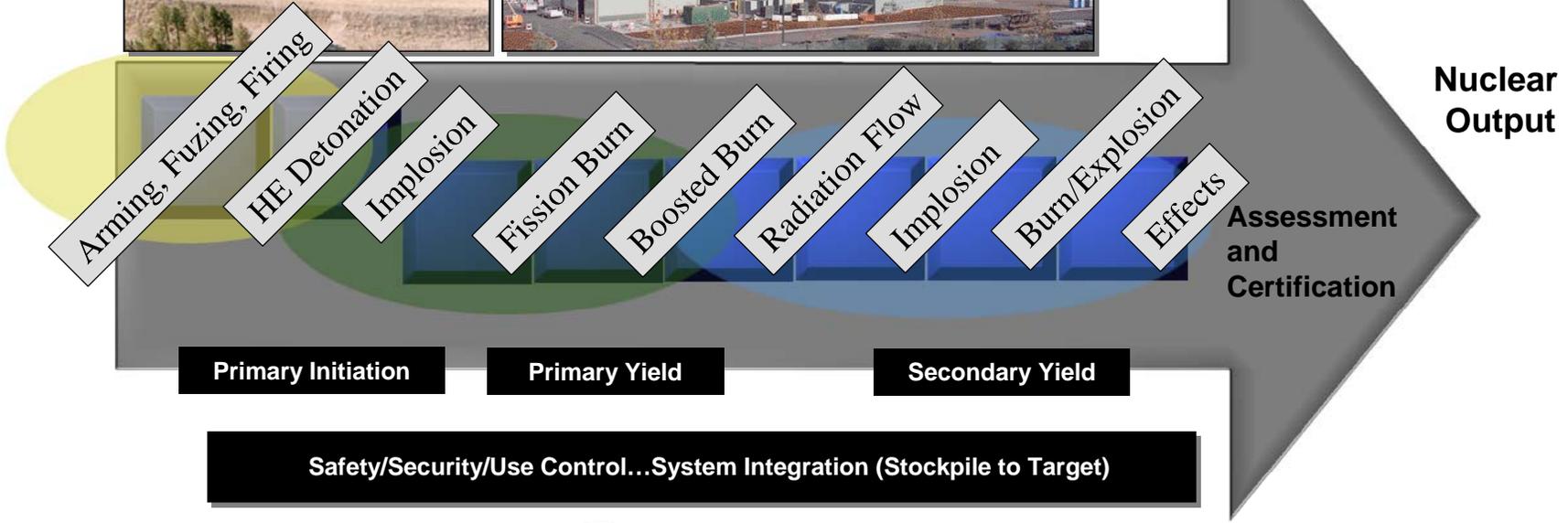
Advanced Hydro Capability



National Ignition Facility



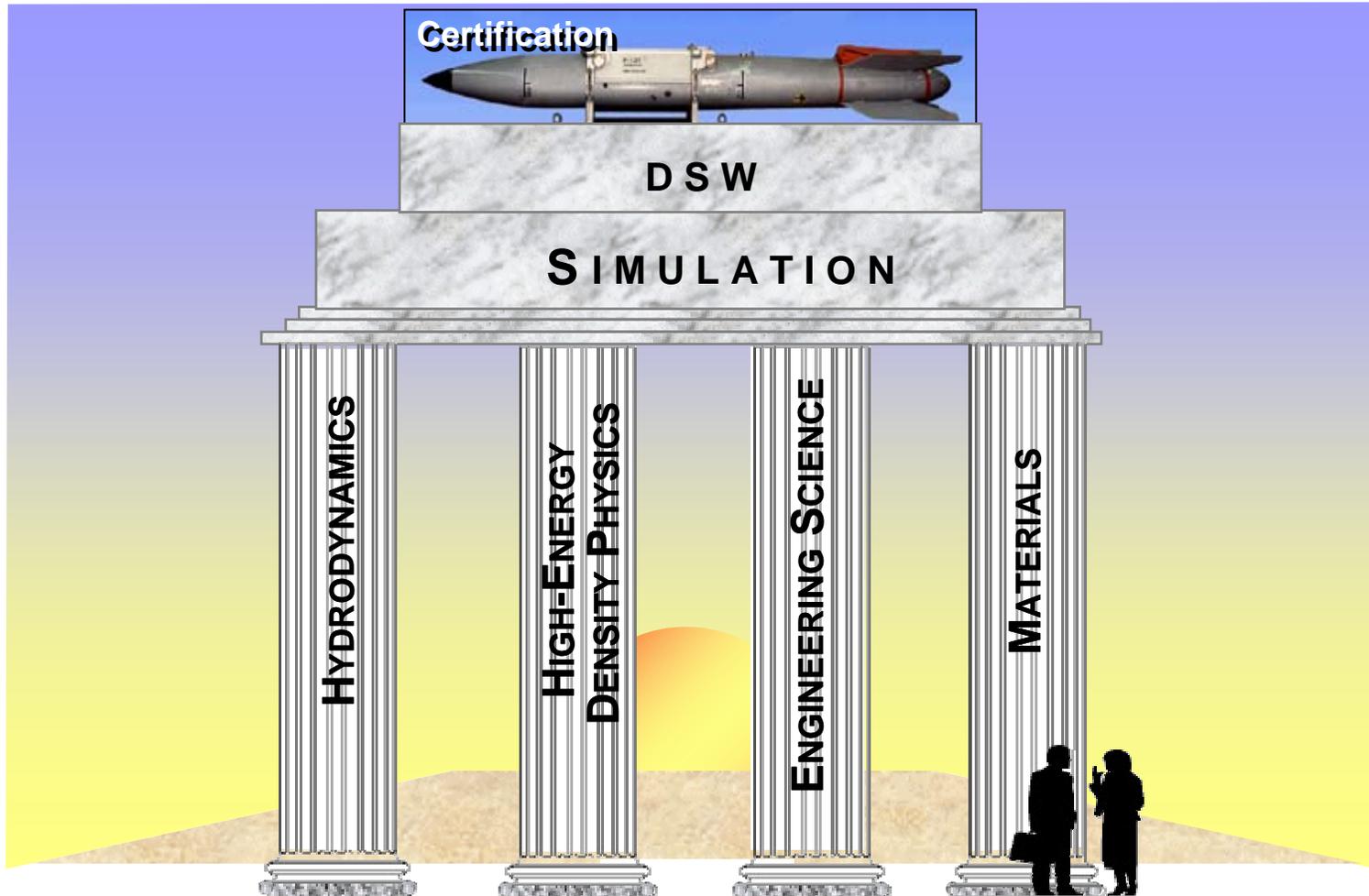
ASC Purple



Materials and Chemistry

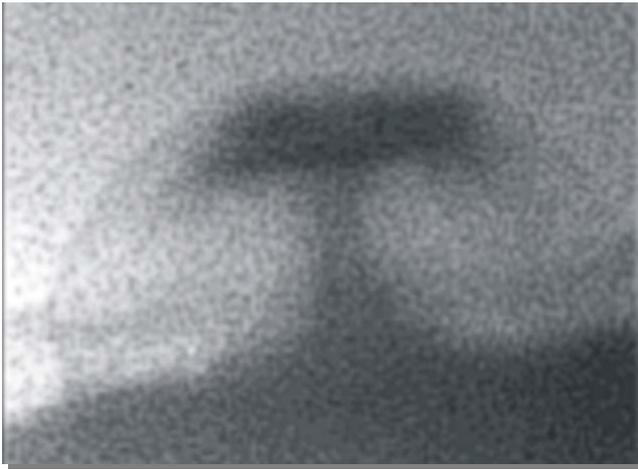


Pillars of Science Converging on Certification



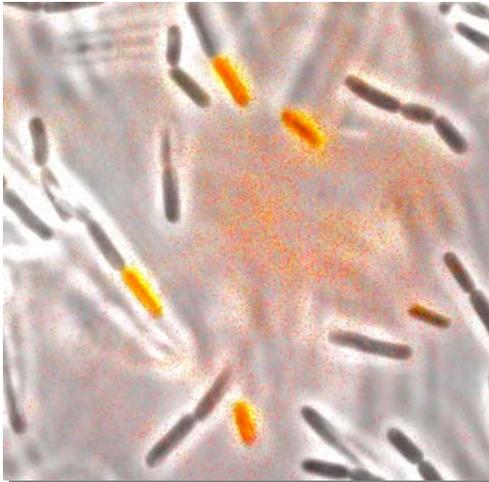
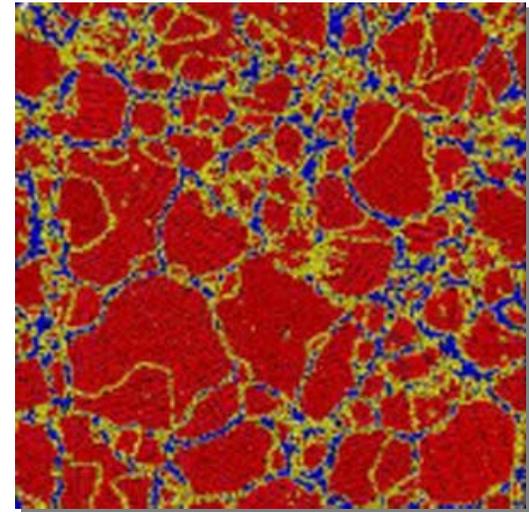


Cutting-Edge Research Has Always Been a Vital Part of the Laboratory



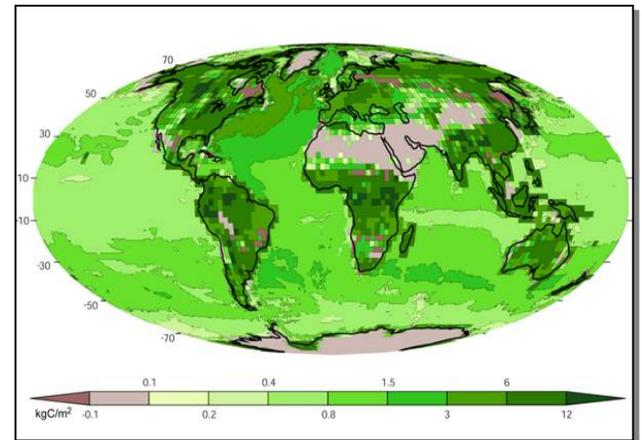
Laser-driven
Hydro
Experiments

High Performance
Computing &
Materials
Simulation



Bioscience

Carbon Cycle
and Climate



Science underpins all missions.



LLNL is Currently Responsible for Four Weapon Types in the Nuclear Stockpile

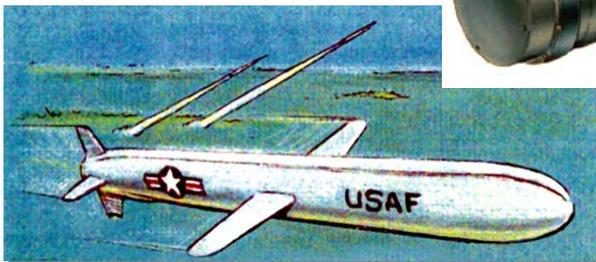


W62 ICBM Warhead

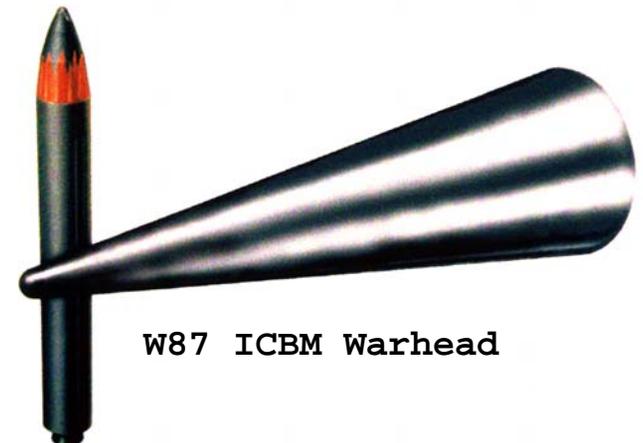
B83 Gravity Bomb



W80



Cruise Missile Warhead



W87 ICBM Warhead



Work-For-Others (WFO) FY2005 WFO Funding – \$336M*



DoD
48% of WFO
324 FTEs

Sample Tasks

- .. Counterproliferation and Counterterrorism Analysis
- .. Chemical-Biological Defense
- .. Radiological-Nuclear Security, Monitoring, Detection
- .. Remote Sensing
- .. Laser Communications
- .. Detection and Defense Systems
- .. Nuclear Weapons Effects
- .. Forensic Science Chemical Threat Analysis
- .. International Assessments
- .. Weapons Assurance Analysis
- .. Advanced Conventional Munitions R&D
- .. Laser Technology Applications
- .. Advanced Optics Applications
- .. Modeling and Simulation
- .. High Performance Computing

DHS

26.7% of WFO
236 FTEs

Sample Tasks

- .. Information and Infrastructure Analysis
- .. Emergency Preparedness
- .. Border and Transportation Security
- .. Radiological-Nuclear Countermeasures
- .. Chemical-Biological Countermeasures

Non-Federal Sample Tasks

10% of WFO
45 FTEs

- .. Forensic Science Assays
- .. Remote Sensing
- .. Advance Conventional Weapons R&D
- .. Laser Communications
- .. High Performance Computing
- .. NIF R&D
- .. Adaptive Optics
- .. Chem-Bio Collaboration w/Universities
- .. Rad Collaboration w/Universities

Other Federal Sample Tasks

5.7% of WFO
66 FTEs

- .. Advanced Material Science
- .. Risk & Response Assessment/Modeling
- .. Other topics listed for DoD, except Weapons Assurance and Munitions R&D

DOE/IC

9.5% of WFO
91 FTEs

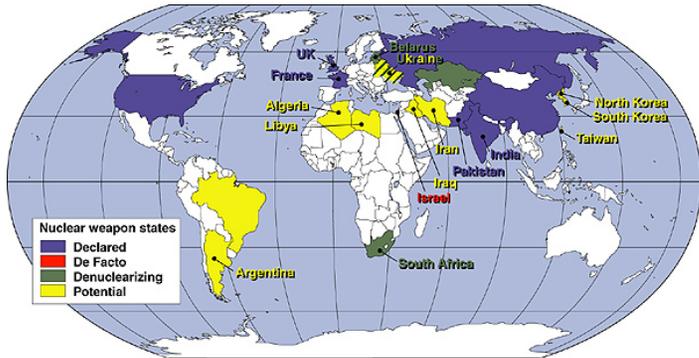
Sample Tasks

- .. Weapons Assurance Analysis/Planning
- .. Materials Testing and Performance Modeling
- .. Conflict Simulation Training

* Does not include GSO; ACTIVE projects only



LLNL's Efforts in Homeland Security Have National, State, and Local Benefits

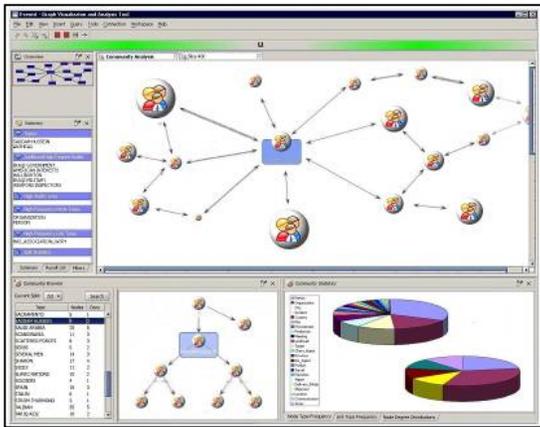


Integrated Intelligence Analysis

Active neutron interrogation system for detecting fissile material inside cargo containers



Autonomous Pathogen Detection System (APDS) in field demonstration at SFO



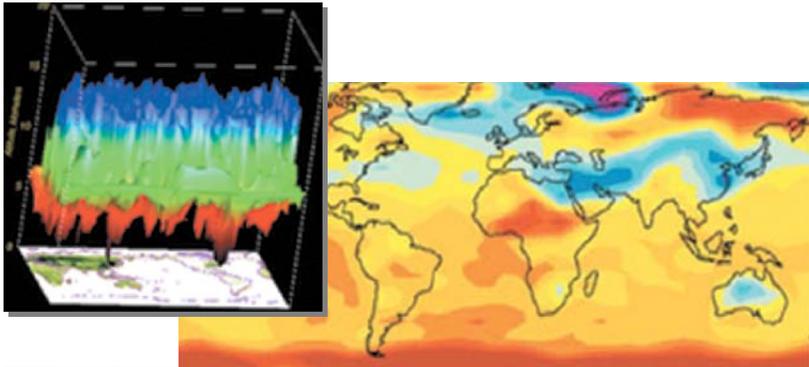
Information Operations and Analysis



Handheld Explosive Test Device



Critical Operational Support Facilities



Forensic Science Center



NARAC Operations Center

FOR OFFICIAL USE ONLY

Biodefense Knowledge Center
SCIENCE-BASED • INTELLIGENCE-INFORMED • TECHNOLOGY-ENABLED

Assessment Report

TRACKING NUMBER: BDC0001

TITLE: [Image of a man speaking at a podium]

DATE/TIME: [Image of a group of people]

TYPE: [Image of a man speaking at a podium]

SUSPENSE: [Image of a man speaking at a podium]

RESPONSE: [Image of a man speaking at a podium]

CO: [Image of a man speaking at a podium]

POC Name: [Image of a man speaking at a podium]

Title: [Image of a man speaking at a podium]

Organization: [Image of a man speaking at a podium]

1. An article
What if a
flock and
what say
and's sec
world.

A terrorist
the agent
Scope
Injecting s

Bio Knowledge Center

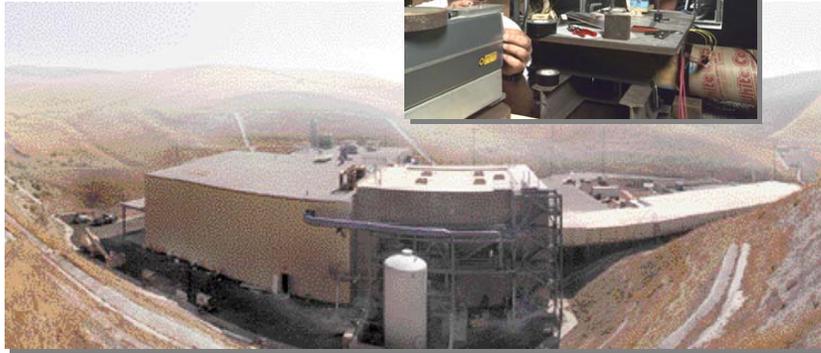




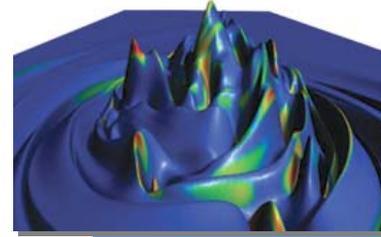
LLNL R&D Facilities



Contained Firing Facility



Terascale Simulation Facility



National Ignition Facility



High-Explosives Application Facility





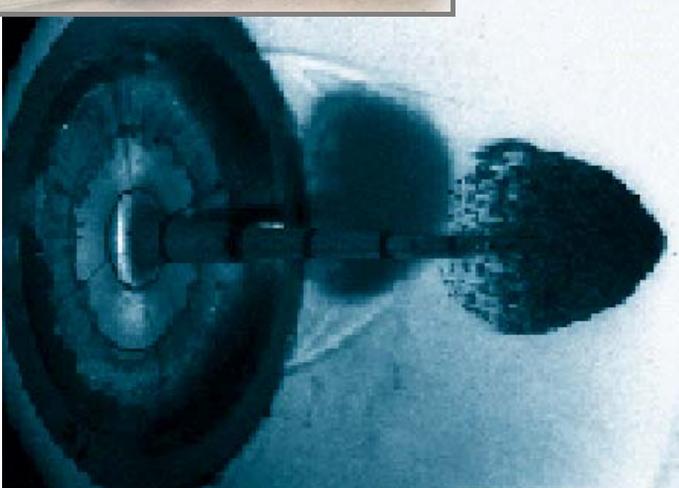
Site 300 Supports NNSA and WFO



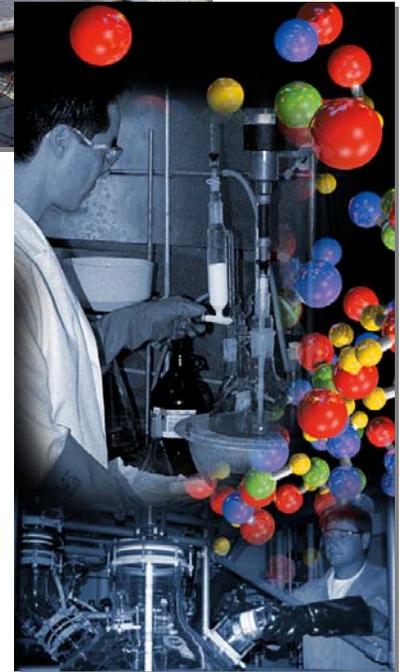
Contained Firing Facility



Emergency Response and Training



DOD Conventional Weapons



High Explosive R&D



LLNL Active Construction Projects



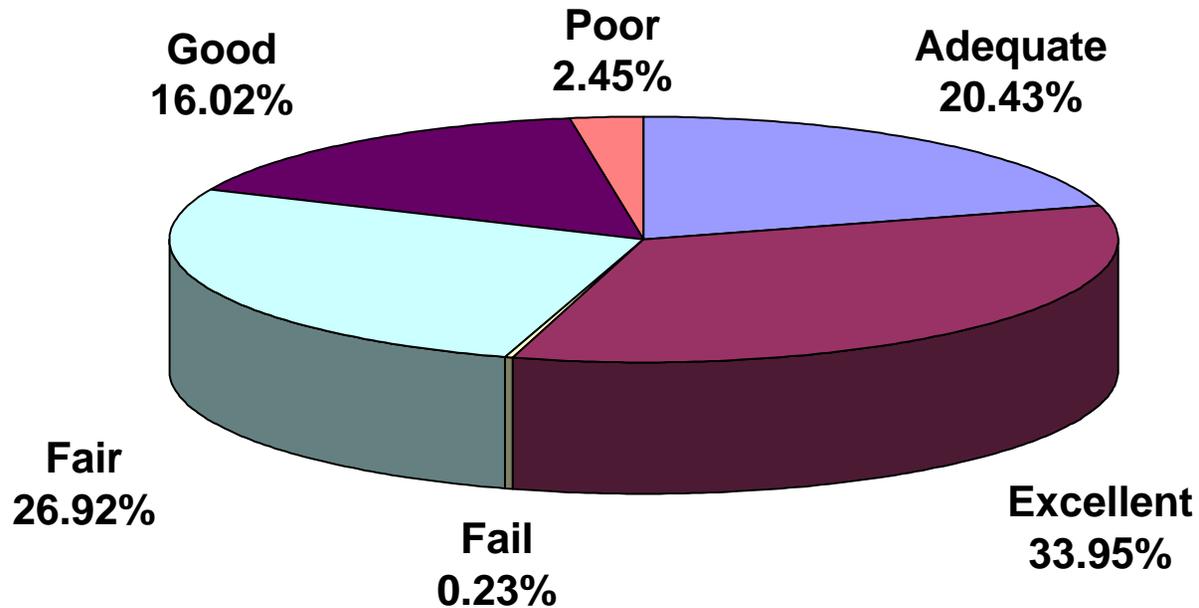
Project	Scope	Total Project Cost	Estimated Completion	Status
National Ignition Facility (NIF) 96-D-111	Construct NIF to advance the understanding of inertial confinement fusion in support of stockpile stewardship programmatic mission	\$2,248.1M (TPRC): \$3,502.3M	FY2009	Under construction Complete in 2009
Terascale Simulation Facility (TSF) 00-D-103	To provide advanced simulation and computing capability to support stockpile stewardship programmatic mission	\$94.1M	FY2006	Complete in December 2005
Engineering Technology Complex Upgrade (ETCU) 01-D-103-04/02-D-105	Modernize mission essential facility to support stockpile stewardship programmatic mission (B-321)	\$27.6M	FY2007	Under construction
Tritium Facility Modernization (TFM) 03-D-103-04/06-D-403	Modernize tritium capabilities to support stockpile stewardship programmatic mission (B-331)	\$13.2M	FY2009	Under construction



LLNL Facility Condition



Total gross square footage = 7,381,343



End of FY06 Projections:

Projected Site-wide facility condition index (FCI) = 6.8%

Projected Site wide deferred maintenance = \$288M



NNSA View Toward the Future of LLNL



- **Maintain nuclear weapons design and surveillance.**
- **Extend LLNL as a national resource of exceptional scientific and technological prowess.**
- **Apply technically-based leadership to lead change at LLNL and throughout the weapons complex consistent with “Complex 2030”**
- **Apply modern management approaches for planning and execution of program deliverables and for efficiency of operations.**
- **Lead in advancing safety and environmental quality at LLNL.**
 - **“The goal should be zero”**
 - Accidents**
 - Environmental violations**
- **Provide physical and cyber security commensurate with highest standards for material and information critical to our national security.**



NNSA Expectations for LLNL— Science and Security



- **A safe and secure environment for high risk/consequence research and development supporting national security.**
- **Efficient operations of challenging facilities to enable safe and secure science.**
- **Completion of the National Ignition Facility and national leadership in achieving ignition and in application of high energy density physics to warhead analysis and certification.**
- **Application of LLNL's science and technology capability broadly to national needs in security and economic development.**
- **The contractor is recognized for valuable and critical contributions to national security and that reputation has value to the contractor.**