

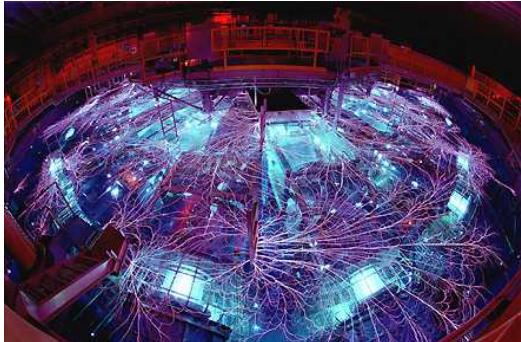
Exceptional service in the national interest



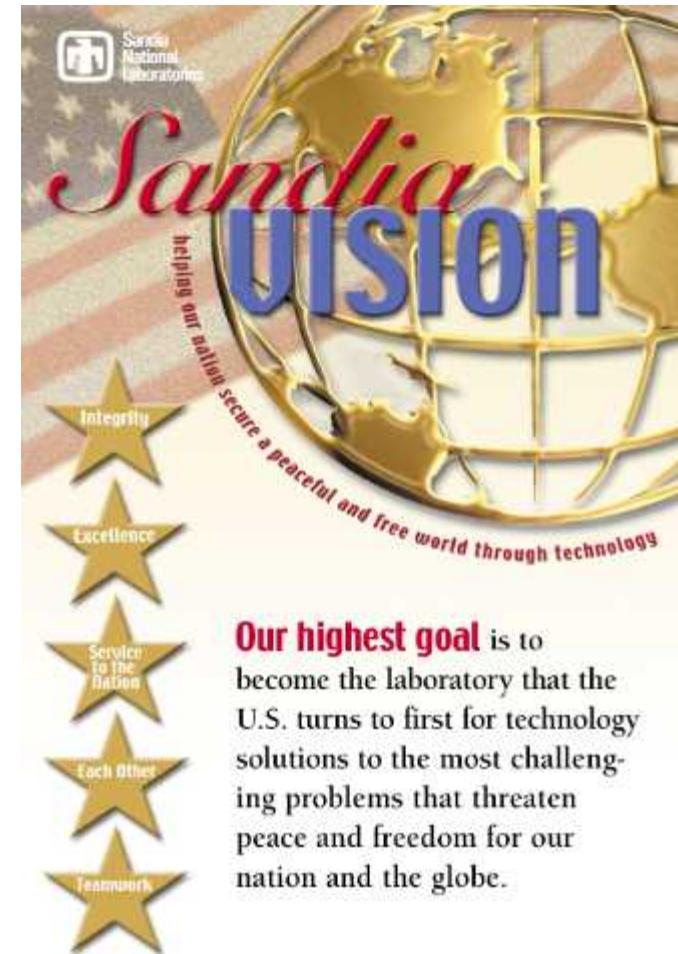
Sandia National Laboratories

General Information Session
Rensselaer Polytechnic Institute
September 27, 2012

The laboratory the U.S. turns to first



- National Security Laboratory
- Broad mission in developing science and technology applications to meet our rapidly changing, complex national security challenges
- Safety, security and reliability of our nation's nuclear weapon stockpile



Our highest goal is to become the laboratory that the U.S. turns to first for technology solutions to the most challenging problems that threaten peace and freedom for our nation and the globe.

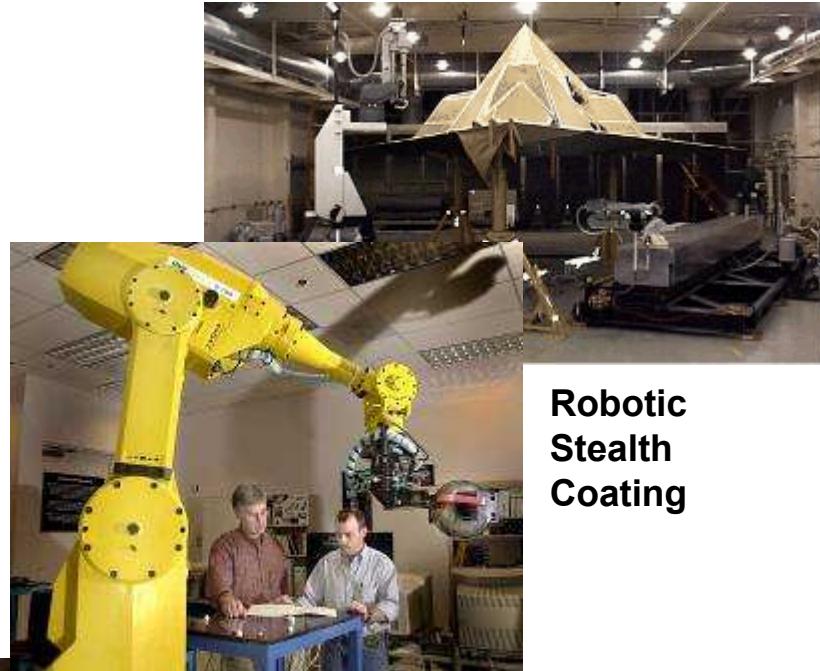
More than 60 years of Exceptional Service in the National Interest



**Cleanroom
invented 1963**



**Unabomber and
shoe bomber
investigations**



**Robotic
Stealth
Coating**



**Intelligent
machines**



Addressing Our Evolving National Security Environment is of the Greatest Importance



Traditional strategic nuclear threats



Threats from other nation states



Threats from non nation states



Threats of tech surprise



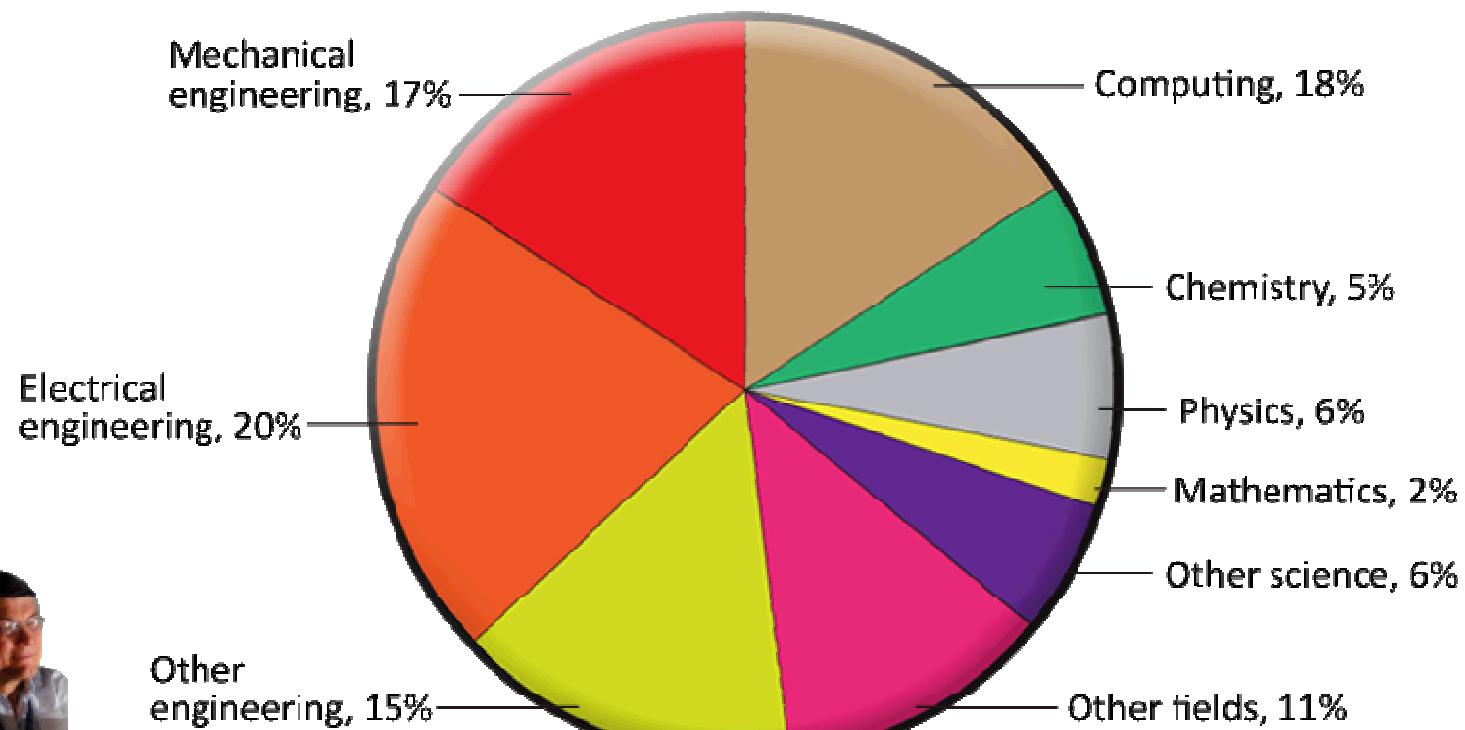
Other threats: natural disasters, climate change, energy supply

Who works at Sandia?

- Onsite workforce: 11,500
- Regular employees: 8,950
- Gross payroll: ~\$515M
- Budget: \$2.4B

Data for FY12 through the end of March

Technical staff (4,650) by discipline



Career possibilities

- » [Aerospace Engineering](#)
- » [Bioscience](#)
- » [Business Support & Operations](#)
- » [Chemistry & Chemical Engineering](#)
- » [Computer Science](#)
- » [Cyber Security](#)
- » [Electrical Engineering](#)
- » [Geoscience](#)
- » [Materials Science](#)
- » [Mechanical Engineering](#)
- » [Nuclear Engineering](#)
- » [Physics](#)
- » [Systems Engineering](#)

Computer Science and Engineering



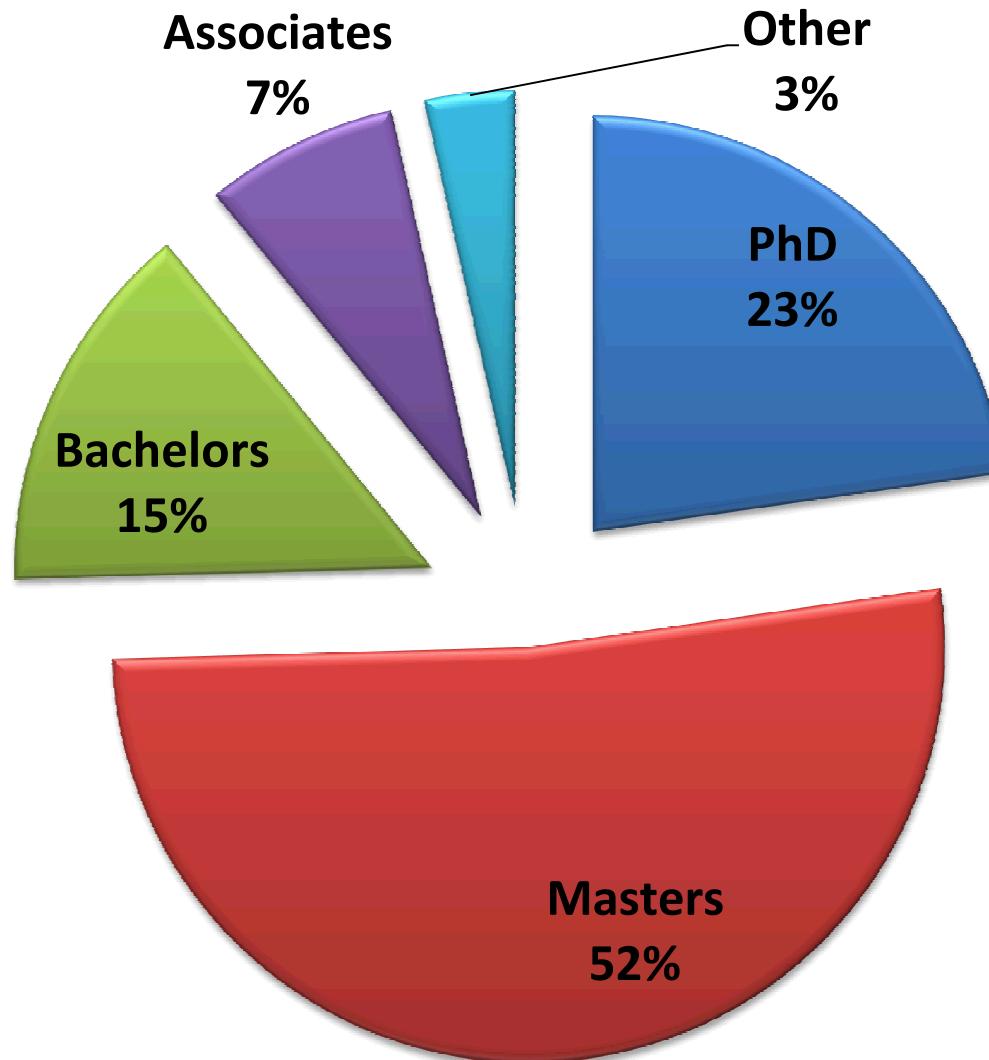
- Systems engineering
- Distributed system design
- Data exploitation/mining/fusion algorithms
- Digital signal processing
- Image processing
- User interfaces
- Scientific data visualization
- Numerical analysis
- Service-oriented architectures
- Relational/object/geographic database technologies

Software Engineering

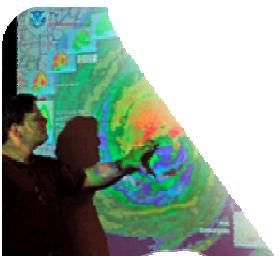
- Large Projects
 - Multi-year development cycles
 - Millions of lines of code
 - Large teams/Independent Projects
 - S.E. design methodologies
 - Processes and process designs
 - Distributed Computing
 - Project/Program Mgmt
- Small Projects
 - Research and engineering
 - Rapid development cycles



Who is Sandia looking for?



**Projected Hires
by Degree Level**



Why Work at Sandia?

- The Work Experience
 - Challenging assignments
 - State-of-the-art research facilities
 - Internationally recognized scientists and engineers
 - Rotational opportunities
 - Diverse fields
 - Educational Advancement Opportunities
- 401(k)
 - Sandia automatically contributes 6%
 - Then matches 2/3 of your first 6% contribution
- Work/Life Balance
 - 9/80 work week
 - Flex time
 - Vacation buy
 - Vacation – 3 weeks; 11 paid holidays
 - Telecommuting
 - Holiday Shutdown
- Site Amenities
 - Medical clinic
 - Company sports teams
 - Recreational Equip rentals
 - Indoor/outdoor pools
 - Rock climbing gym

Special Programs



- Master's Fellowship Program (MFP)
- Critical Skills Master's Program (CSMP)
- Student Internship Program (SIP)
- Tuition Assistance Program (TAP)
- University Part-Time (UPT)
- Special Masters Program (SMP)
- Doctoral Study Program (DSP)
- Wounded Warrior Career Development Program

Emerging National Security Thrusts



Nuclear



Energy



Cyber



Science & Technology



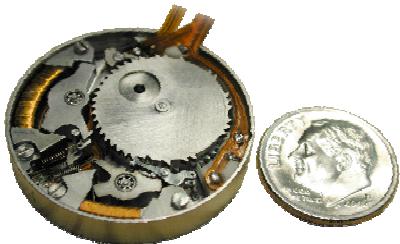
Nuclear Weapons



Integrated,
engineered warhead
systems



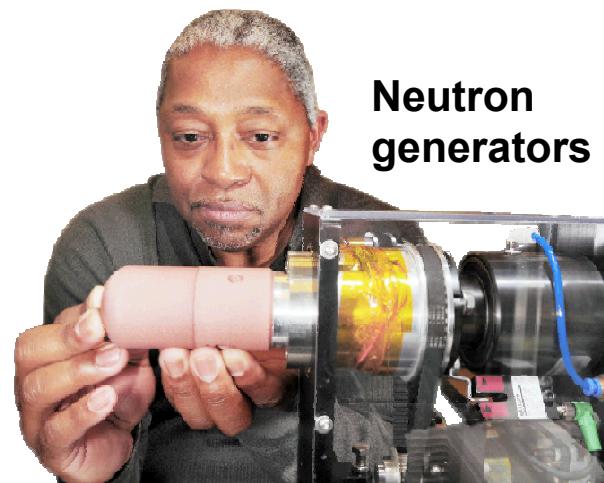
Arming, fuzing,
and firing
systems



Safety systems



Gas transfer
systems



Neutron
generators

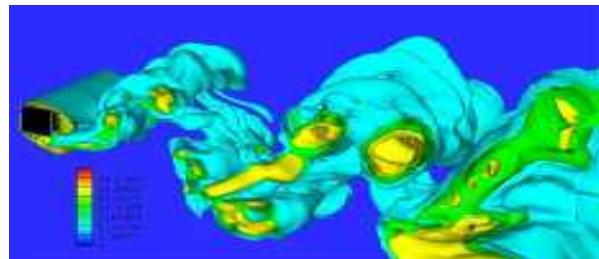
High reliability, high consequence of failure, challenging environments, and technology solutions

Facilities and Capabilities



Microelectronics and microsystems

Design, fabricate, package, and test trusted semiconductor components



Computational simulation

High-performance hardware and software tools to enable solutions requiring massively parallel computers



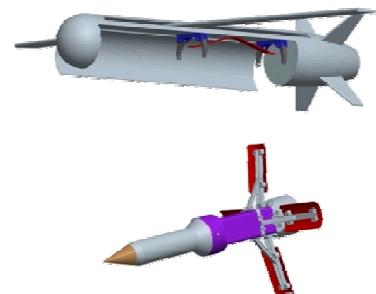
Environmental testing

Simulate environmental conditions and collect relevant data for systems, subassemblies, and components

Defense Systems and Assessments

Program Areas

- Information Operations
- Integrated Military Systems
- Proliferation Assessment
- Remote Sensing & Verification
- Space Mission
- Surveillance & Reconnaissance



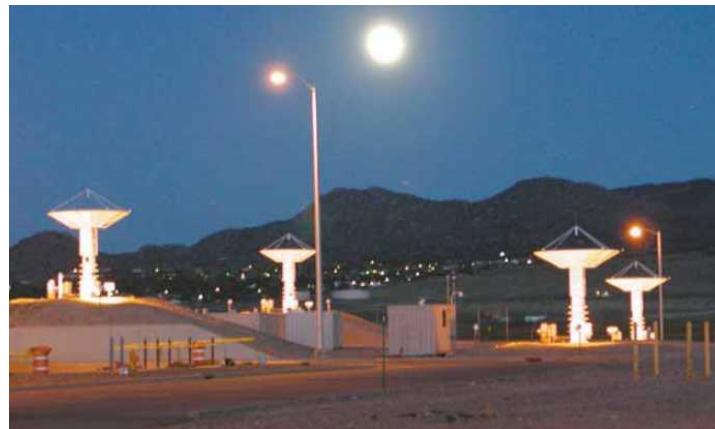
Areas of Expertise

- Nuclear Detonation Detection System
- Nonproliferation
- Cyber Security
- Synthetic Aperture Radar
- Space Situational Awareness
- Data Processing and Exploitation



Global Nuclear Detonation Detection System

- Created for US Air Force ground stations by Sandia
- Helps Air Force personnel in their 24/7/365 mission to monitor the globe for nuclear detonations
 - Processes data from dozens of satellites
 - Provides operators with information to decide quickly whether it is a violation of international law or designate the event as something less nefarious
- US policy makers need accurate real-time information about the time, location, yield, and any other evidence available



Energy, Climate, and Infrastructure Security



Program Areas

- Infrastructure Security
- Energy Security
- Climate Security
- Enabling Capabilities



Areas of Expertise

- Modeling & Analysis, Cyber, Electricity Distribution, and Energy Assurance
- Renewables, Energy Efficiency, Energy for Transportation, and Nuclear Energy Systems
- Sensing & Monitoring, Carbon Capture, Sequestration, Modeling and Analysis, and Water
- Discovery Science & Engineering, Systems Analysis, and Regulatory & Policy



Program Areas

- Critical Asset Protection
- Global Security
- Homeland Defense and Force Protection
- Homeland Security

Areas of Expertise

- Counteracting Bioterrorism
- Nuclear, Radiological, and Chemical Risk Reduction
- Nonproliferation and Arms Control
- Physical Security
- Emergency Response
- Systems Analysis and Engineering
- Border Security
- Aviation and Airworthiness Security



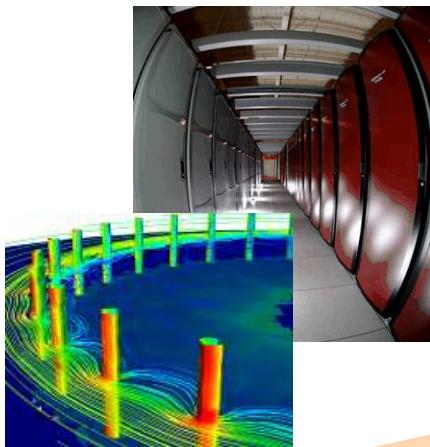
Transportation Safety and Security



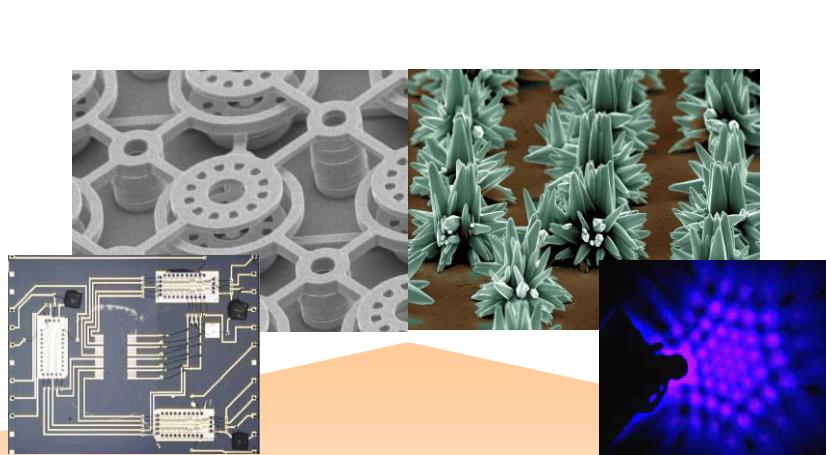
- TWA Flight 800
- Forest Service aircraft
- Airport portals
- Sniffer/PROTECT



Research Disciplines Drive Capabilities



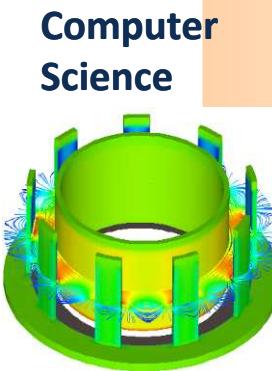
High Performance Computing



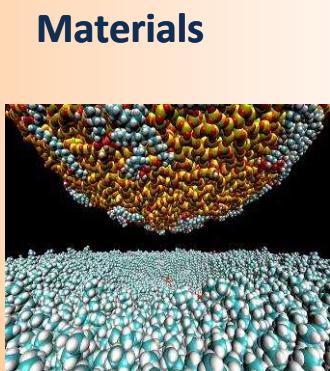
Nanotechnologies & Microsystems



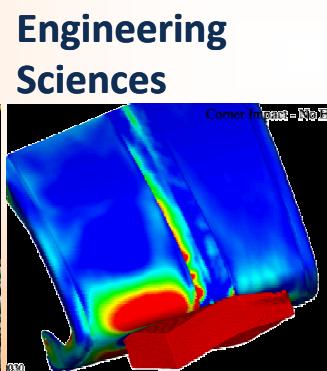
Extreme Environments



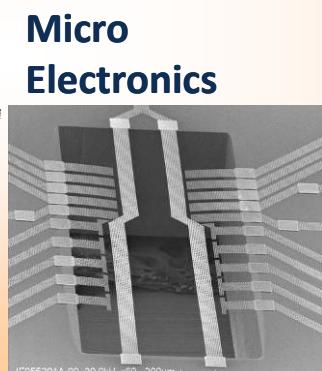
Computer Science



Materials



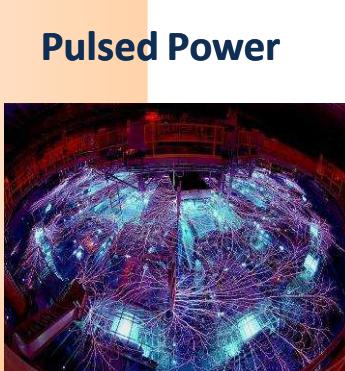
Engineering Sciences



Micro Electronics



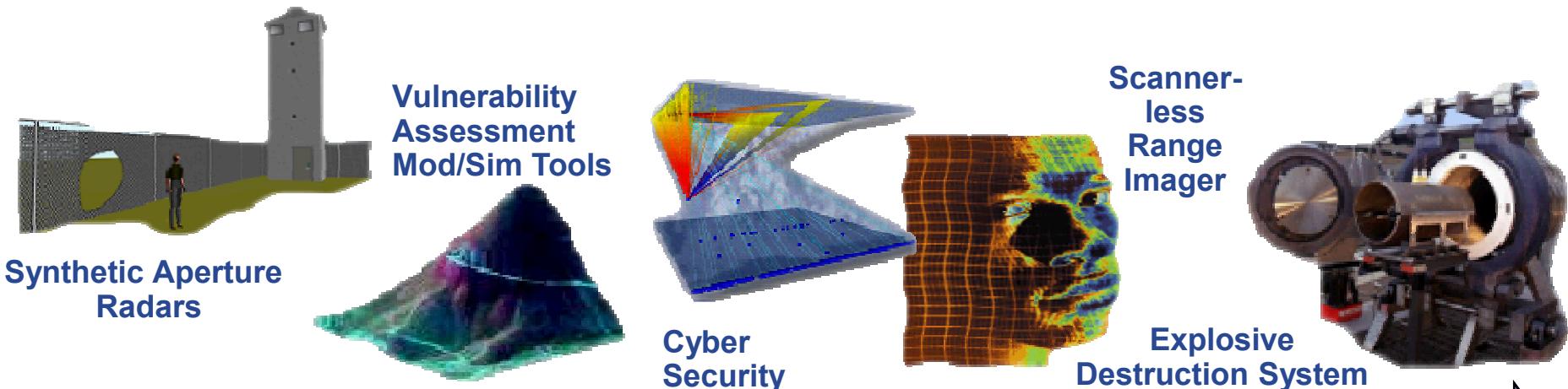
Bioscience



Pulsed Power

Research Disciplines

Exploring Solutions Across the Threat Spectrum



Anticipate

Predict & Prevent

Respond

Recover

Access Delay



**Critical
Infrastructure
Protection Systems
Analysis Tools**

Unattended
Ground Sensors



**Explosive Detection
Portal**



**Radiation
Remediation Foam**



**Tunnel
Characterization**

Partnerships & Collaboration

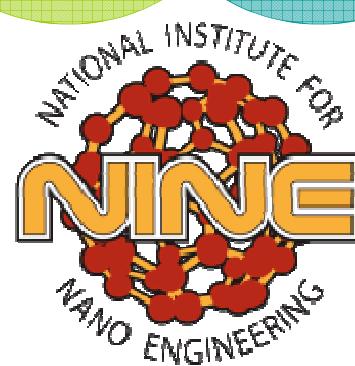
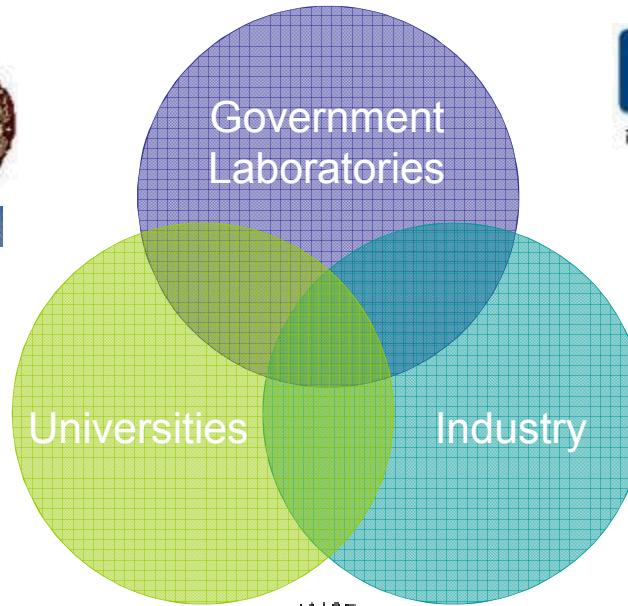
Accelerate Innovation



[The University of Texas](#)



[The University of New Mexico](#)



CORNING **P&G**

intel. **GOOD YEAR** **IBM.**

hp **invent** **LOCKHEED MARTIN**

ExxonMobil

Taking on the world's toughest energy challenges.™



Sandia National Labs Locations

- Primary Site:
 - Albuquerque, New Mexico
- Second Main Facility:
 - Livermore, California
- Test Facilities:
 - Tonopah Test Range, Nevada
 - Kauai Test Facility, Hawaii
- Other Locations:
 - Carlsbad Programs Group, New Mexico
 - Nevada Projects Team, Nevada
 - Sandia Program Office, Washington, D.C.
 - Weapons Evaluation Test Laboratory, Texas



Life in Albuquerque, NM



Great skiing: less than an hour away from Albuquerque

Four seasons, including winter!

Hiking,
climbing,
and outdoor
activities
galore



The most
beautiful sunsets
you'll ever see

Expect the Unexpected

New Mexico has a lot of the things you know and love...

Life in Albuquerque, NM



**Visit the Grand Canyon,
Utah, Colorado,
gorgeous state parks,
Native American
pueblos**

**Laid-back
Southwest
culture**



Unique Southwest sights!



**Balloon Fiesta
and Rodeos!**

...and a lot of adventures that you won't find anywhere else!

Technological Innovation in New Mexico



Raytheon



Life in Livermore, CA



**Livermore is in California Wine Country –
enjoy 40+ world class wineries nearby**

**Yosemite, Big Sur, and other amazing
exhibits of natural beauty!**



Sandia in the Heart of the Golden State

Life in Livermore, CA



San Francisco is less than an hour away!



Use your 9/80 Fridays to explore everything California has to offer!

North to redwoods and south to LA

Sandia in the Heart of the Golden State

How Do I Apply?

- Visit us at the career fair booth tomorrow
- www.sandia.gov/careers
 - You must apply to a job posting
 - Apply to all postings that interest you

Science and Engineering Expo (SEE)



November 11 – 13 in Albuquerque, NM

- Interview with key hiring managers for job opportunities in NM or CA
- Meet top research scientists and engineers
- Tour “state of the art” facilities
- Explore Albuquerque

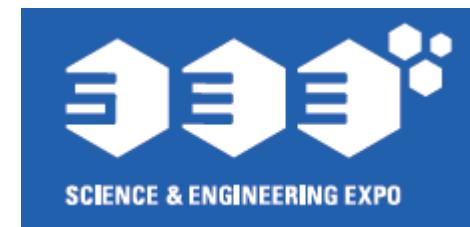


- Requirements:
 - Master's or PhD in STEM fields
 - GPA of 3.5/3.7 for BS/MS or greater
 - U.S. citizenship

Science and Engineering Expo (SEE)



- *An Invitation Only Hiring Event*
- Interested candidates should:
 - Visit www.sandia.gov/careers
 - Click on 'View All Jobs'
 - Enter 'SEE 2012' into the Keywords field search
 - Upload resume & cover letter
 - Await invitation



Specific Postings

- Systems Mission Engineering
 - Full-time: 641611
 - Critical Skills Masters Program (CSMP): 641086
 - Masters Fellowship Program (MFP): 641528
 - Student Internship Program (SIP) Undergrad Summer: 641517
 - Student Internship Program (SIP) Grad Summer: 641524
- Systems Evaluation Engineering
 - Full-time: 641273

www.sandia.gov/careers



The following are all extra slides
– hidden unless needed

The People of Sandia Give Back

- United Way in 2011
 - New Mexico: >\$4.6M
 - California: \$250,000
- Lockheed Martin donations to nonprofit organizations – \$1.4M
- Volunteer hours in 2011– 108,000
- K-12 education partnerships
- Beginning our 12th habitat house in April 2012



United Way of Central New Mexico



President Harry S. Truman Fellowship

- Candidates are expected to have solved a major scientific or engineering problem in their thesis work or provided a new approach or insight to a major problem.
- Opportunity for new Ph.D. scientists and engineers to pursue independent research of their own choosing that supports Sandia's national security mission.
- The appointee is expected to foster creativity and to stimulate exploration of forefront science and technology and high-risk, potentially high value research and development.
- Sandia's research focus areas are: bioscience, computing and information science, engineering science, materials science, nanodevices and microsystems, radiation effects and high energy density physics, and geosciences.
- www.sandia.gov/careers/students_postdocs/fellowships/truman_fellowship.html

Special Program Postings

- CSMP (Critical Skills Master Program)
 - 641317: Computer Systems and Security Engineer
 - 641320: Computer Systems and Security Engineer
 - 641086: Computer Science/Computer Engineering or Electrical
 - 641322: Computer Systems and Security Engineer
 - 641521: Monitoring Systems & Technology
 - 641574: Computer Science/Computer Engineering
- MFP (Masters Fellowship Program)
 - 641475: Fire Protection Engineer
 - 641528: Integrated Decision Support
 - 641627: Computer Science/Computer Engineering
 - 641628: Mechanical Engineer
 - 641629: Electrical Engineer
 - 641630: Surety Engineering