SAND2008-7758P

Overview of Sandia National Laboratories (SNL) with emphasis on Integrated Technologies & Systems (ITS)

Presented to

The Rutherford Appleton Laboratory

Dr. A. D. Romig, Jr.

Executive Vice President and Deputy Laboratories Director
Integrated Technologies and Systems Strategic Management Group,
and Interim Chief Operating Officer
Sandia National Laboratories

December 01, 2008

Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000

Sandia National Laboratories

Our Business: National Security

- **Core purpose**
  - to help our nation secure a peaceful and free world through technology

- **Highest goal**
  - to become the laboratory that the United States turns to first for technology solutions to the most challenging problems that threaten peace and freedom for our nation and the globe

Heritage

"Exceptional service in the national interest"

THE WHITE HOUSE
WASHINGTON

May 15, 1949

Dear Mr. Wilson:

I am informed that the Atomic Energy Commission intends to ask that the Bell Telephone Laboratories accept under contract the direction of the Sandia Laboratory at Albuquerque, New Mexico.

This operation, which is a vital segment of the atomic weapons program, is of extreme importance and urgency in the national defense, and should have the best possible technical direction.

I hope that after you have heard more in detail from the Atomic Energy Commission, your organization will find it possible to undertake this task. In my opinion you have here an opportunity to render an exceptional service in the national interest.

I am writing a similar note direct to Dr. C. E. Buckley.

Very sincerely yours,

Harry Truman

Mr. Leroy A. Wilson,
President,
American Telephone and Telegraph Company,
195 Broadway,
New York 7, N. Y.

Sandia National Laboratories

Sandia's Administration

Government-Owned
Contractor-Operated

- AT&T: 1949–1993
- Martin Marietta: 1993–1995
- Lockheed Martin: 1995–Present

Federally
Funded
Research &
Development
Center

Sandia's Sites

Albuquerque,
New Mexico

Livermore,
California

Yucca Mountain,
Nevada

WIPP,
New Mexico

Kauai,
Hawaii

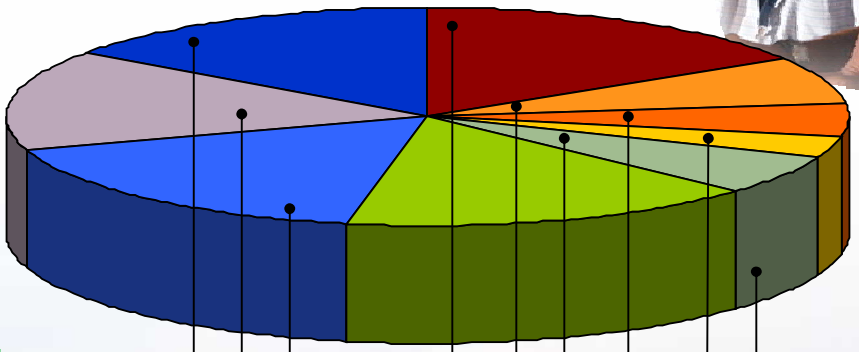
Pantex, Texas

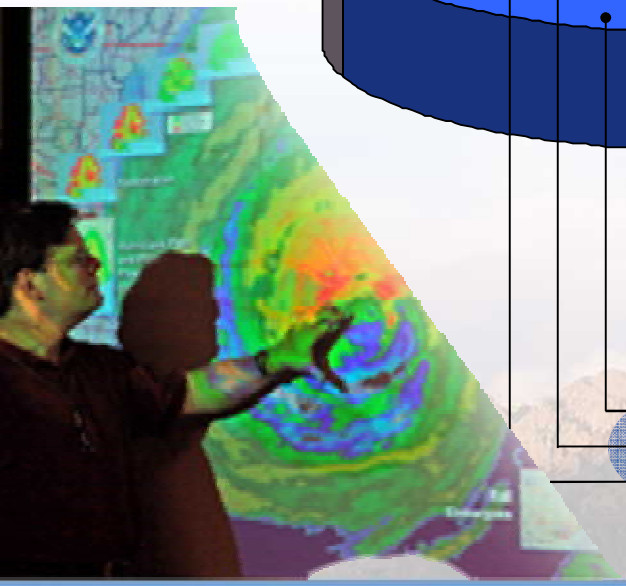
Tonopah, Nevada

Sandia's People

- On-site workforce: 11,200
- FY08 permanent workforce: 8,400
- FY08 gross payroll: $886.1M
- FY08 budget: $2.3B

Technical Staff (3,844) by Degree
(End of FY08)

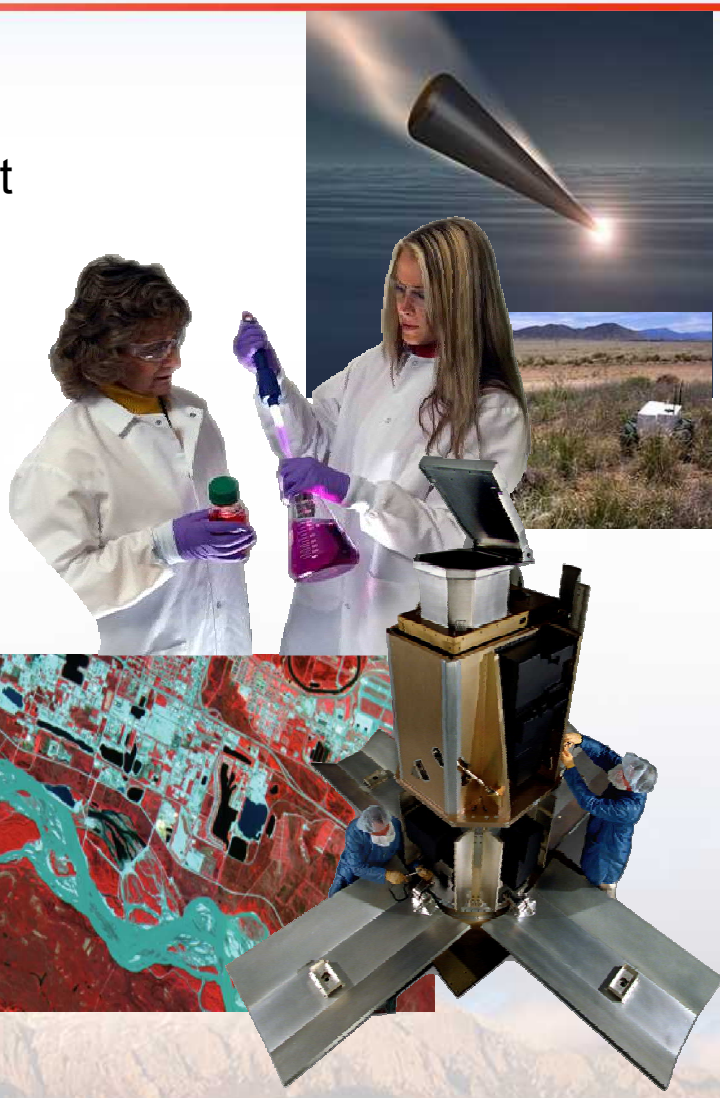




Sandia National Laboratories

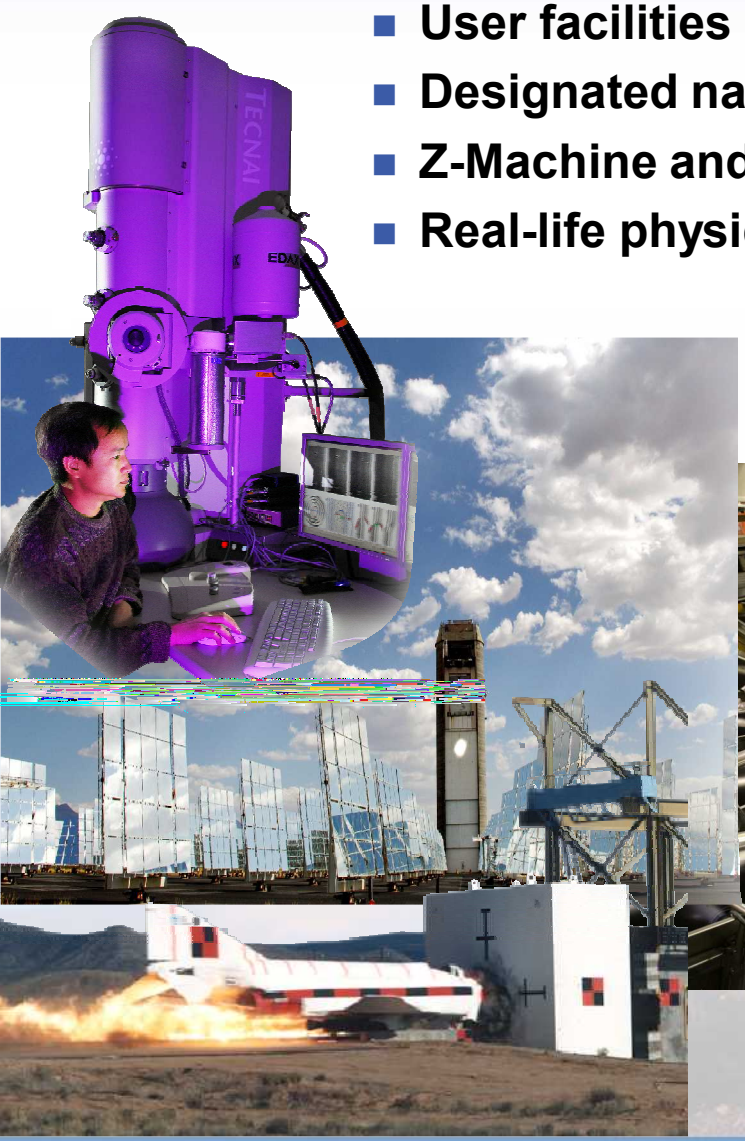
Science, Technology and Engineering for National Security

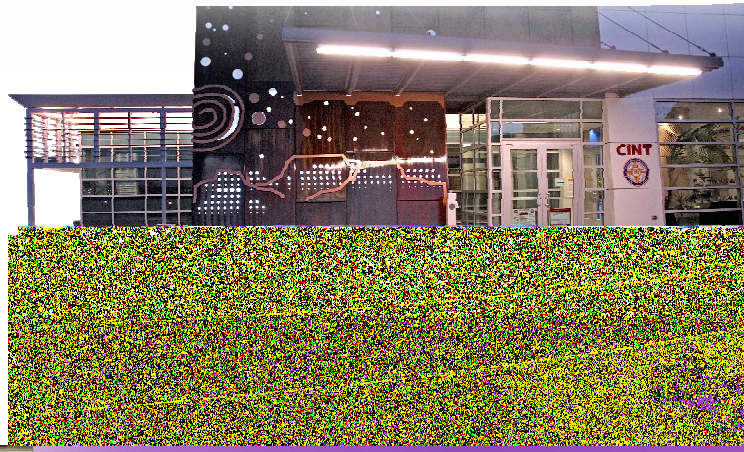
- **We develop technologies to:**
  - Sustain, modernize, and protect our nuclear arsenal
  - Prevent the spread of weapons of mass destruction
  - Provide new capabilities to our armed forces
  - Protect our national infrastructures
  - Ensure the stability of our nation's energy and water supplies.
  - Defend our nation against terrorist threats

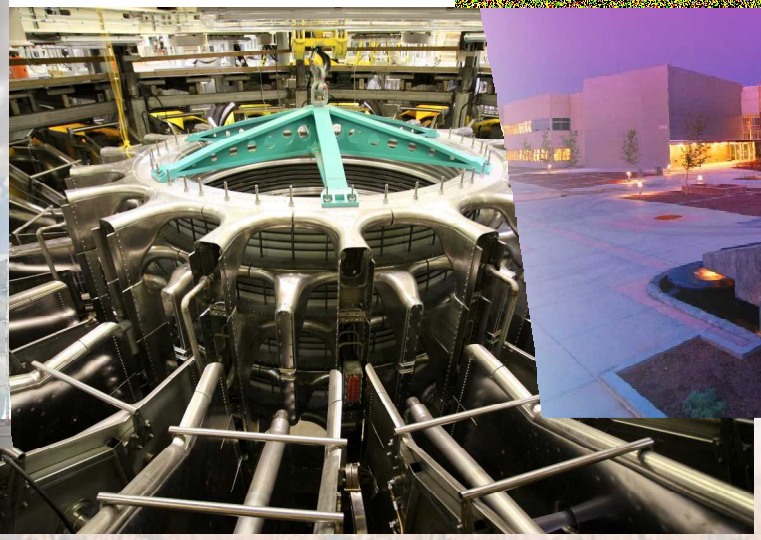


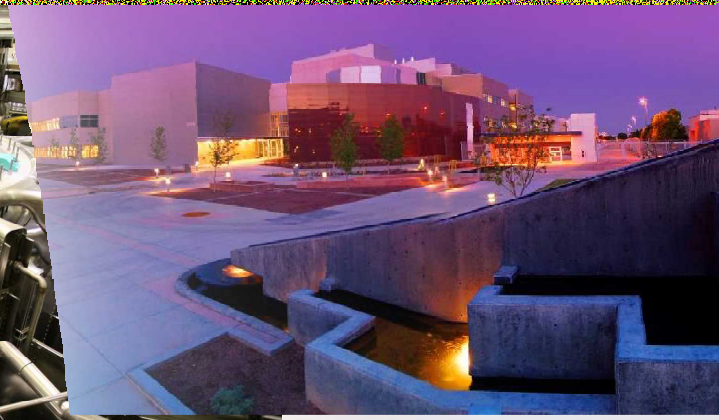
Unparalleled Facilities and Test Capabilities

- User facilities
- Designated national capabilities
- Z-Machine and radiation effects
- Real-life physical test ranges



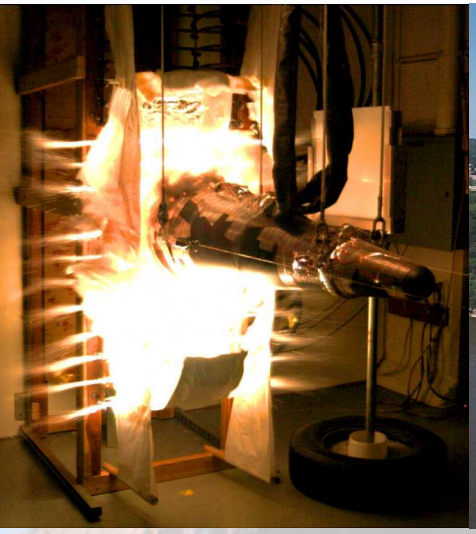






Four Mission Areas

- Nuclear Weapons
- Defense Systems and Assessments
- Energy, Resources and Nonproliferation
- Homeland Security and Defense



Sandia's Executive Management Structure

Tom Hunter
President & Laboratories Director

Joan Woodard
Deputy Director for Nuclear Weapons Program

Al Romig
Interim Deputy Director, Laboratory Transformation

Deputy Director for Integrated Technology and Systems (ITS)

Lenny Martinez
Regional Technology

Rick Stulen
S&T and Research Foundations

Steve Rottler
Weapons Engineering & Product Realization

Joe Polito
Enterprise Transformation

Becky Krauss
General Counsel & Corporate Secretary

Matthew O'Brien,
CFO & Business Operations

Mike Hazen
Infrastructure Operations

John Slipke
Human Resources & Communications

Jerry McDowell
Defense Systems & Assessments

Les Shephard
Energy, Resources & Nonproliferation

Paul Hommert
Homeland Security and Defense

Gerry Yonas
Principal Scientist

Nuclear Deterrence for National Security

Defense Programs Mission

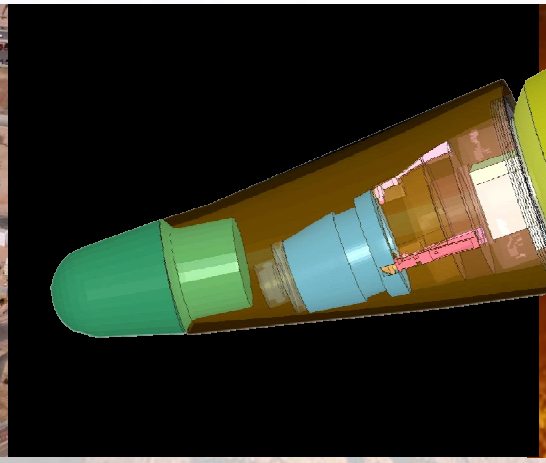
Credible deterrence built on

(1) a safe, secure and reliable nuclear weapons stockpile capable of meeting all military requirements now and in the future, and

(2) a science-based engineering infrastructure capable of responding to national security needs whenever they arise

Microsystems and Engineering Sciences Applications (MESA) complex

AF&F impact simulation



Pulsed power— Z Machine

Integrated Technologies & Systems (ITS) Strategic Management Group (SMG) Programs

Al Romig
Deputy Director for Integrated Technology Programs & Interim Deputy Director for Laboratory Transformation

Jerry McDowell
Defense Systems & Assessments SMU

Les Shephard
Energy, Resources, & Nonproliferation SMU

Paul Hommert
Homeland Security & Defense SMU

Rick Stulen
S&T and Research Foundations

Steve Rottler
Weapons Engineering & Product Realization

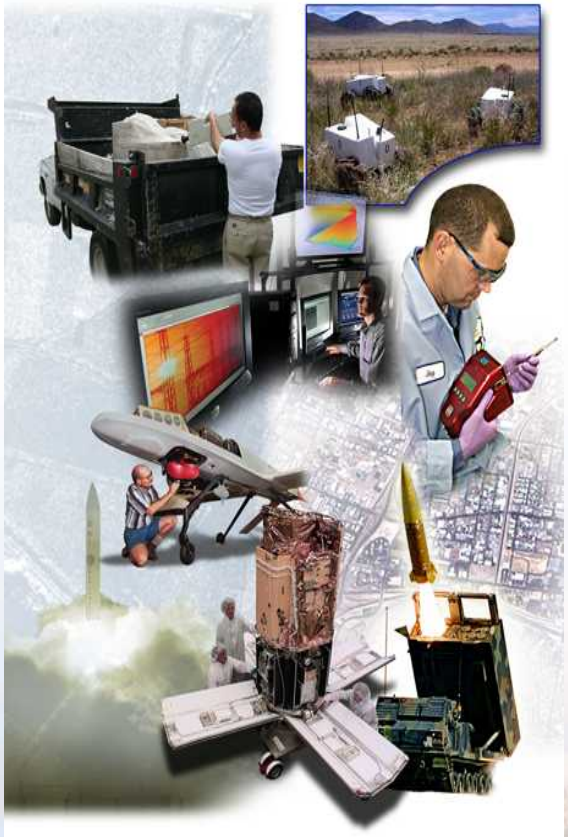
- Information Operations
- Integrated Military Systems
- Surveillance & Reconnaissance
- Proliferation Assessment
- Remote Sensing & Verification
- Science & Technology Products
- Space Mission

- Fuel & Water Systems
- Nuclear Energy
- Global Security
- Driving the Future
  - Office of Science
  - Breakthrough Science & Technology
  - Intrinsic Security
  - Systems Modeling & Analysis

- Catastrophic Event Mitigation
- Risk Management & Infrastructure Protection
- Homeland Defense & Force Protection

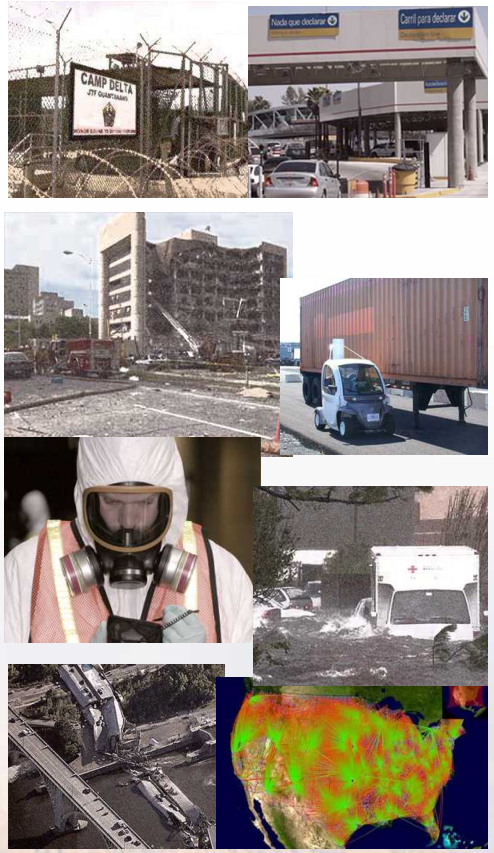
Enhancing Our Nation's Strategic National Security

Defense Systems and Assessments



Energy, Resources and Nonproliferation

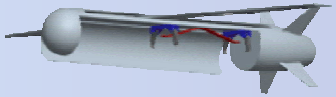
Homeland Security and Defense

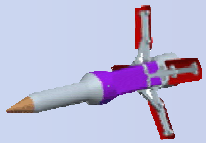


Defense Systems & Assessments (DSA)
Strategic Management Unit (SMU) Programs

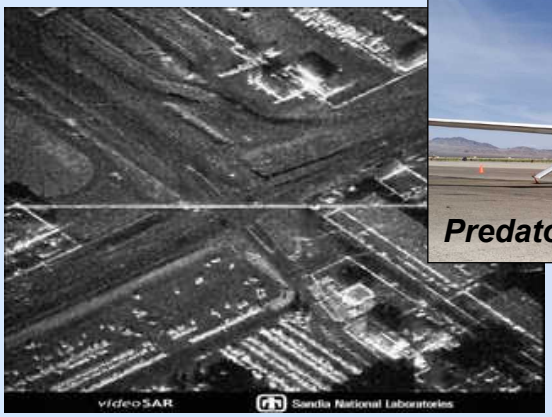
- Proliferation Assessment
- Remote Sensing & Verification
- Surveillance & Reconnaissance
- Integrated Military Systems
- Information Operations
- Science & Technology Products
- Space Mission Program

Targets





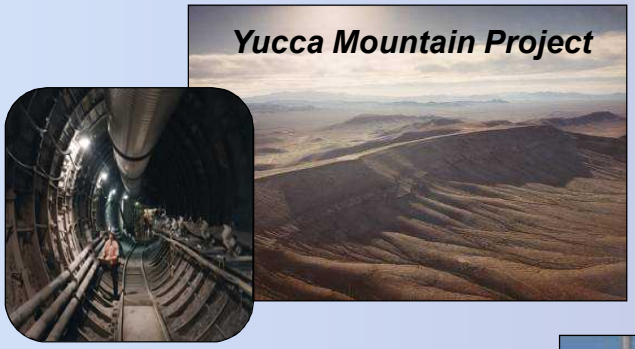
Sensor
Dart



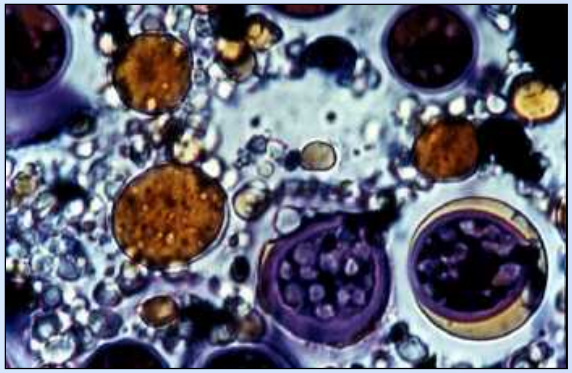
Real-time SAR Images

Energy, Resources, & Nonproliferation (ERN) SMU Programs

- Fuel & Water Systems
- Nuclear Energy
- Global Security




Truck in radiation portal monitor at Southampton Port, U.K.


Algae-Based Production of Biofuels


Center for Integrated Nanotechnologies (CINT)


Homogeneous Charge Compression Ignition (HCCI) Engine

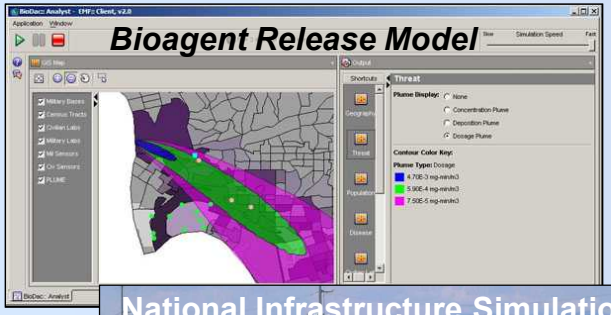

High Temperature Solid State Battery (HTSS10V)

Homeland Security & Defense Programs (HSD) SMU Programs

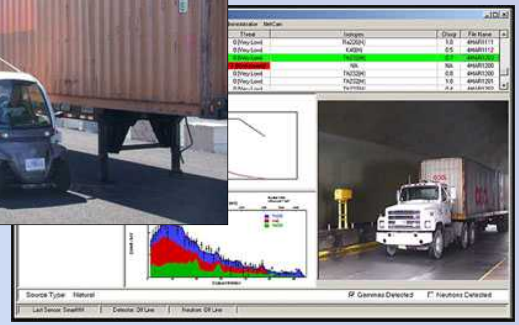
- Catastrophic Event Mitigation
- Homeland Defense & Force Protection
- Risk Management & Infrastructure Protection


Handheld explosives detector


Facility protection program for MDA: Interceptor at Fort Greely, Alaska




National Infrastructure Simulation & Analysis Center (NISAC)


SMART Radiation Detector

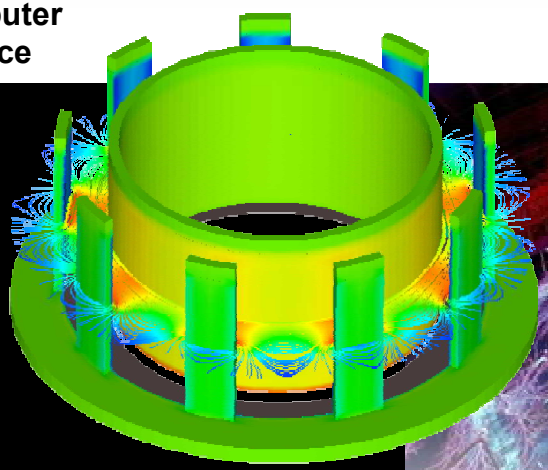

SNIFFER was successfully used at the 2008 Super Bowl event

Sandia National Laboratories

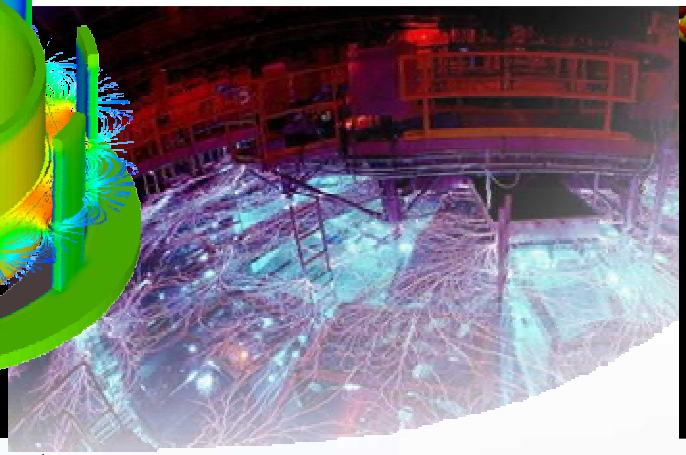
Missions Enabled by Strong Science and Engineering

Research Disciplines

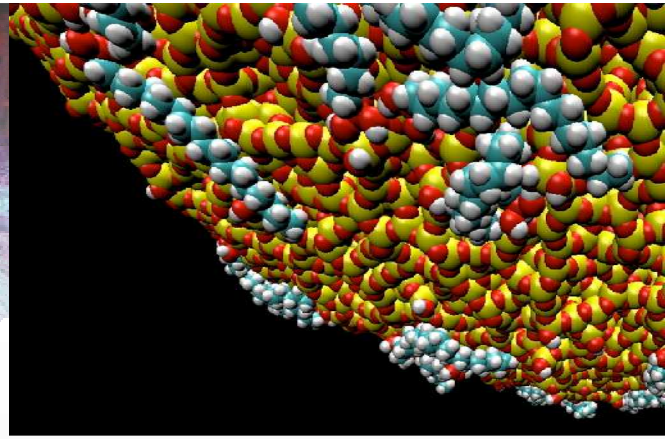
Computer Science



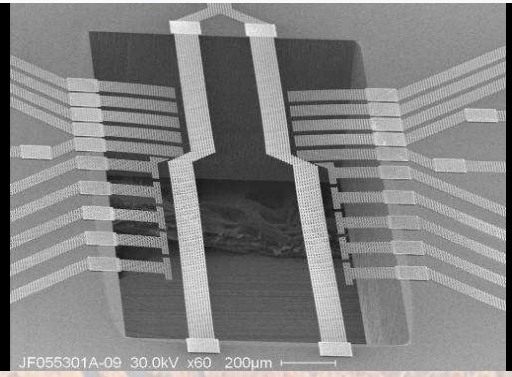
Pulsed Power



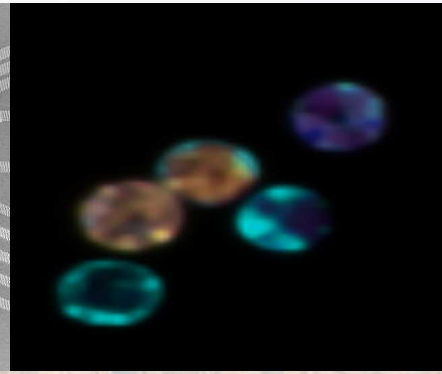
Materials



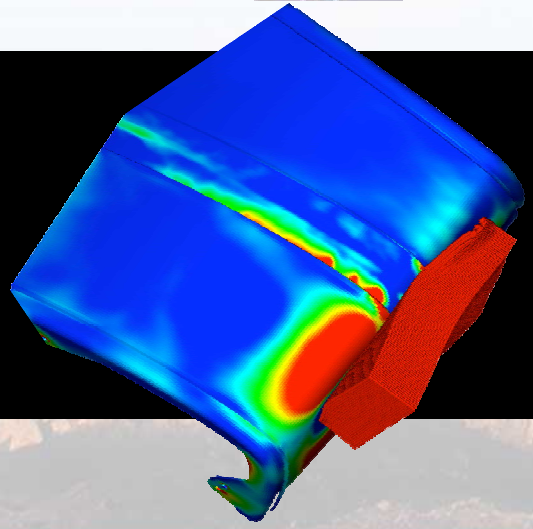
Micro Electronics



Bioscience



Engineering Sciences



Sandia National Laboratories

"Exceptional service in the national interest"