Introduction to Sandia National Labs

EECS Department

September 16, 2008

Cole Shaw
Devin O'Connor
Sandia National Laboratories

Cole's Background

- BS, EE from UM, April 2004
- MSE, EE Systems from UM, April 2005
- Member of Technical Staff at Sandia
  - DoD Security System Engineering
    - 2 years
    - Subsystem / integration engineer
  - Flight & Embedded Software
    - Program Management
    - Hardware testing / data analysis
    - Web-based application development
  - MS/BS Recruiter

Devin's Background

- **MSE, ME from UM, Dec 2007**
- **Member of Technical Staff at Sandia**
  - **Multi-Physics Modeling & Simulation Department**
  - **MS/BS Recruiter**

Today's Goals

- **Introduce you to Sandia National Laboratories**

- **Brief overview of EECS projects at Sandia**

- **Information about Sandia employment**
  - **Current Employment Opportunities**

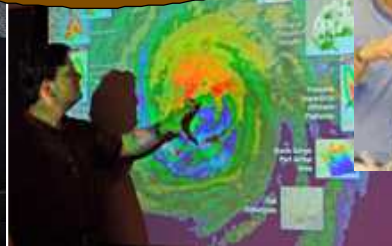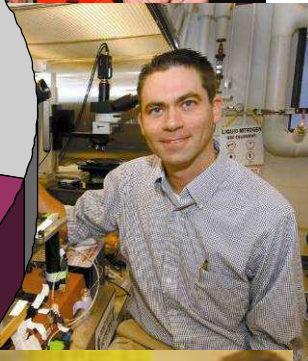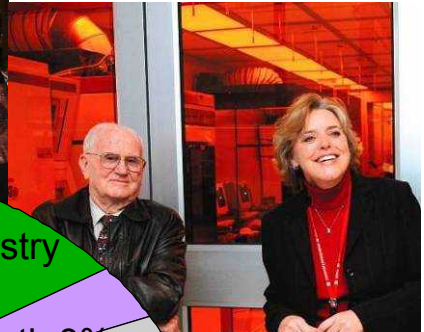- **Questions and Answers**

Sandia Introduction

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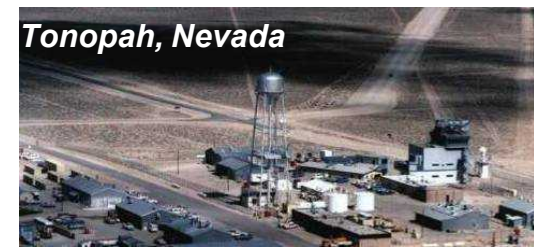
- Questions and Answers

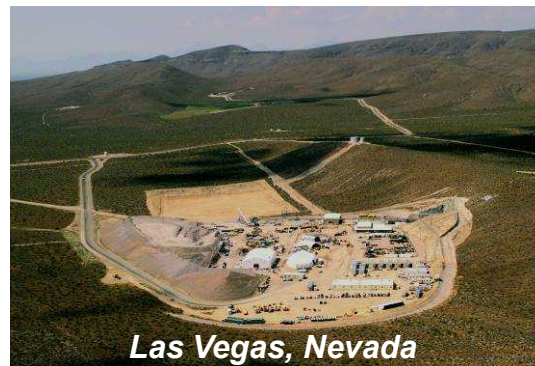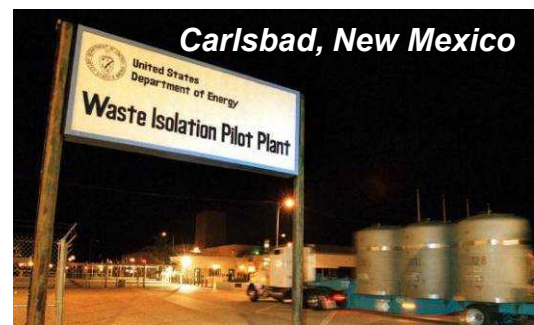# Sandia Core Missions

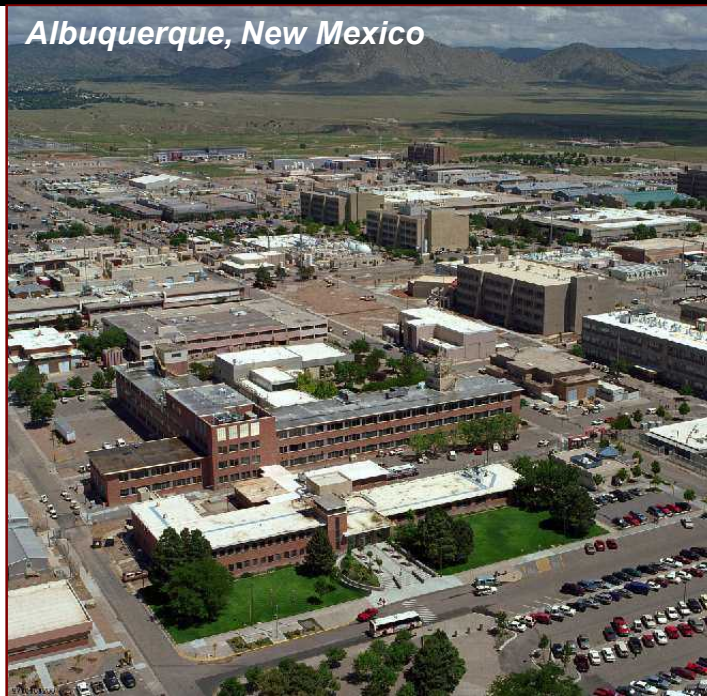- **Video: Corporate overview (5:21)**

Sandia Employs More Than 8,500 Highly Skilled Workers

- **Over 8,500 employees**
- **Over 1,500 PhDs**
- **Over 2,500 MS/MA**
- **Over 1,000 on-site contractors**
- **FY06 operating budget was $2.1 billion**

Pie chart:
- Physics 8%
- Chemistry 7%
- Math 3%
- Computing 11%
- Other Science 6%
- Electrical Engineering 25%
- Mechanical Engineering 15%
- Other Engineering 14%
- Other Fields 11%

Sandia National Laboratories is Geographically Distributed

Tonopah, Nevada

Albuquerque, New Mexico

Kodiak, Alaska

Pantex, Texas

Kauai, Hawaii

Carlsbad, New Mexico

United States
Department of Energy

Waste Isolation Pilot Plant

Las Vegas, Nevada

Livermore, California

Sandia National Laboratories

- **Core Missions**
  - **Nuclear weapons**
    - **Ensure secure & reliable nuclear deterrent**
  - **Non-proliferation**
    - **Reduce proliferation of WMD**
  - **Homeland security**
    - **Protect against terrorism with advanced technology**
  - **Energy & infrastructure assurance**
    - **Ensure clean, abundant, affordable energy & water**
  - **Defense systems**
    - **Maintain US military superiority**
  - **Science, Technology, & Engineering**
    - **R&D programs for national security**

Sandia National Laboratories History

- **Laminar Flow Clean Room invented in 1960**

- **Explosive Detection Portal in airports uses SNL technology**

- **Two supercomputers ranked in the top 50 world-wide**

- **Experts asked to consult on:**
  - **Sago mine explosion**
  - **Columbia shuttle disaster**

EECS Projects at Sandia

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- Questions and Answers

EECS Work

- **Video: EE Perspectives (3:03)**

EECS Projects

- **Supercomputing / parallel computing**
- **Remotely Operated Weapon Systems**
- **Remote Sensing**
- **Synthetic Aperture Radar**
- **Red-teaming / Information Security**
- **Solar Energy**
- **Pulsed Power**
- **MEMS**
- **Nanotechnology**

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Applying For Jobs

• Introduce you to Sandia National Laboratories

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• **Information about Sandia employment**
  – **Current Employment Opportunities**

• Questions and Answers

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Information on Sandia Employment

- **http://www.sandia.gov**

Current Openings

- **77 direct manager requests + current openings posted**
  - **About 50% staff, 50% post-doc / limited term**
- **High demand for EECS majors**
  - **Nano-devices; MEMS**
  - **Analog / digital circuit design**
  - **ASICS / VHDL / FPGA design**
  - **Radar**
  - **Signal Processing, Wireless Communications**
  - **C++, Java, C, Matlab, Fortran, Python**
  - **Information Security; reverse engineering**
  - **Parallel programming; distributed algorithms; machine learning**

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Questions and Answers

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- **Questions and Answers**

Questions?

- **Cole Shaw**
- **cshaw@sandia.gov**

- **Devin O'Connor**
- **dtoconn@sandia.gov**

My role as a recruiter

- **Increase awareness at U of M CoE about Sandia as potential employer for U of M engineers**
- **Serve as human point-of-contact between Sandia and university students**
- **Cannot interview students for BS-level positions**
- **Can interview students for MS and Ph.D.-level positions**
- **Put qualified MS and Ph.D. candidates in touch with hiring managers**

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Campus Interviews

- **Interview/meeting room reserved**
- **Will meet with Ph.D. candidates by appointment for informal interviews**
  - **Meet with me after today's lunch to exchange information**
- **See ECRC's HireME system for current Sandia openings that we can discuss**

BRIEF OVERVIEW OF MY MAJOR PROJECTS AT SANDIA

Education and Work History

- **University of Michigan, Ann Arbor**
  - **BS, Mechanical Engineering, 1991**
  - **MS, Mechanical Engineering, 1992**
  - **Ph.D., Environmental Engineering, 1999**
- **New Mexico Tech, Socorro, NM**
  - **Post-doctoral research assistant, 1999-2001**
- **Sandia National Laboratories, Albuquerque, NM**
  - **Technical staff, 2001-present**

Sandia Projects

- **Nuclear Waste Management (3 yrs)**
  - **Environmental risk assessment modeling for operational nuclear waste disposal site in Carlsbad, NM**

- **US Strategic Petroleum Reserve (3.5 yrs)**
  - **Chemical engineering support for VOC emissions control projects**

Job Search Keys

- **Engage your faculty advisor**
- **Keep in touch with recent graduates in the work force**
- **Look into co-ops and internships**
  - **Effective trial period for both parties**
  - **Often lead to permanent jobs**
- **Use ECRC resources**
- **Most applicable to Ph.D.'s**
  - **Present your work at professional conferences and market yourself while you are there**
  - **Contact people in your field about post-docs because many are not advertised**

Sandia National Laboratories

Post doc job search: What really worked

- **Sent unsolicited e-mails to the top 10 researchers I wanted to work for**
  - **Sources for contacts**
    - **Dissertation bibliography**
    - **Conference proceedings**
  - **Polite e-mail saying that I am graduating soon, interested in their work, CV attached with publications list**
- **8 responses, 5 interviews, 3 job offers in 2 months**
  - **All post-doc positions**

Sandia National Laboratories

Employment website

Employment Website