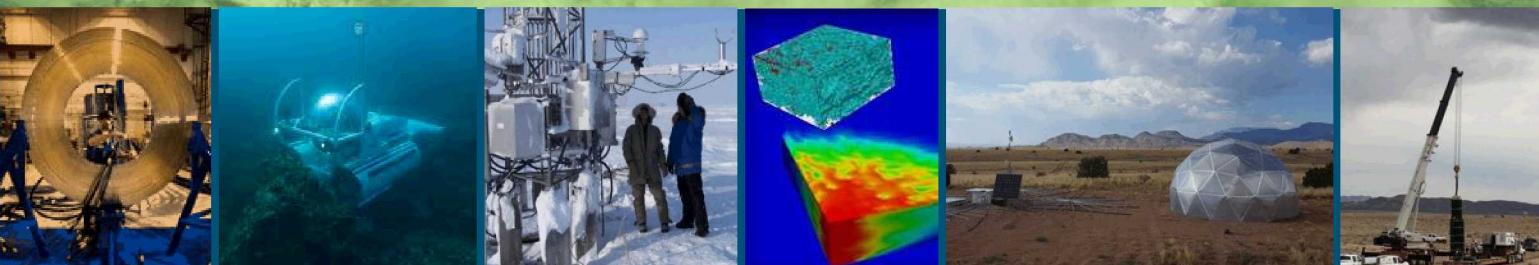
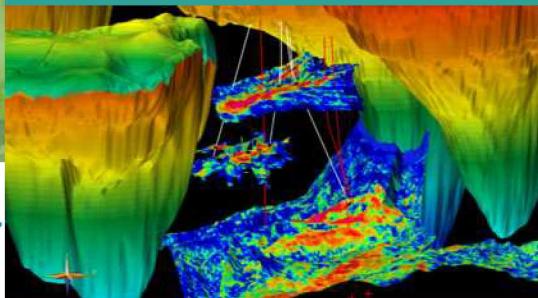




SAND2020-2447PE

Sandia National Laboratories Overview



PRESENTED BY

Erik | Senior Manager, Geoscience Research and Applications

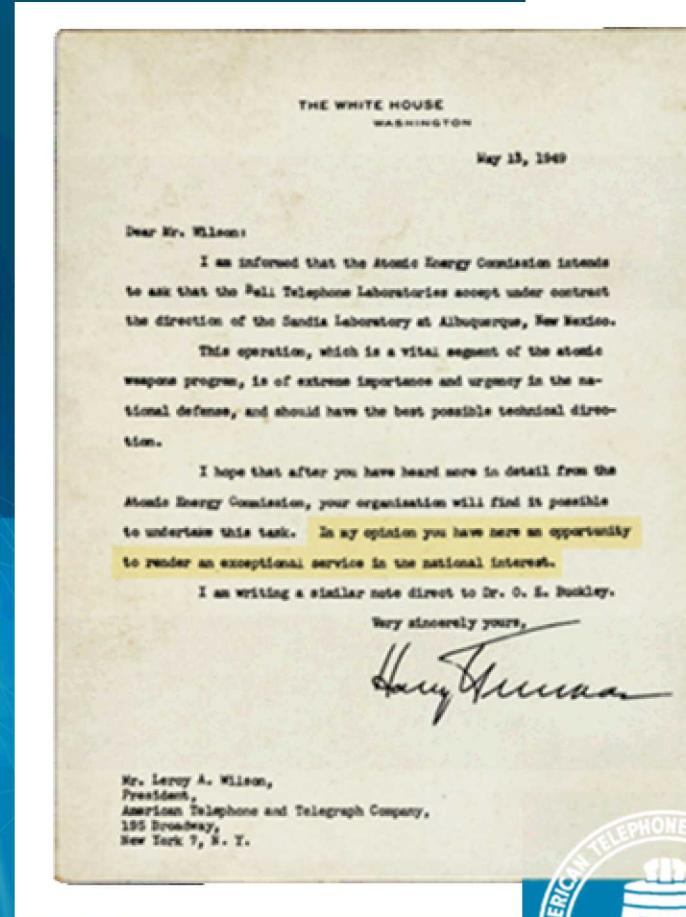
February 25, 2020

Sandia National Laboratories is a multimission laboratory managed and operated by National Technology and Engineering Solutions of Sandia LLC, a wholly owned subsidiary of Honeywell International Inc. for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA0003525. SAND2019-0844 PE

SANDIA'S HISTORY IS TRACED TO THE MAN

...In my opinion you have here an opportunity to render an exceptional service in the national interest.

- July 1945 Los Alamos creates Z Division
- Nonnuclear component engineering
- November 1, 1949, Sandia Laboratory established
- AT&T: 1949–1993
- Martin Marietta: 1993–1995
- Lockheed Martin: 1995–2017
- Honeywell: 2017–present





SANDIA IS A FEDERALLY FUNDED RESEARCH & DEVELOPMENT CENTER OPERATED BY...

National Technology & Engineering Solutions of Sandia,
LLC, a wholly owned subsidiary of Honeywell
International Inc.: 2017 – present
Owned subsidiary of Honeywell
International Inc.: 2017 – present
Government owned, contractor
operated



SANDIA MAIN SITES
Albuquerque, New Mexico
Livermore, California

FACTS & FIGURES

Largest of the national laboratories

FY19 budget of \$3.81B

- 57% allocated to nuclear deterrence

FY20 projected budget of \$3.77B

- 57% allocated to nuclear deterrence

14,089 employees

- 51% are technical staff
- 44% have been at Sandia less than 5 years

Average age of facilities is 39 years

- >7,000,000 sq. ft.
- >300 sq. mi.

LOCATIONS

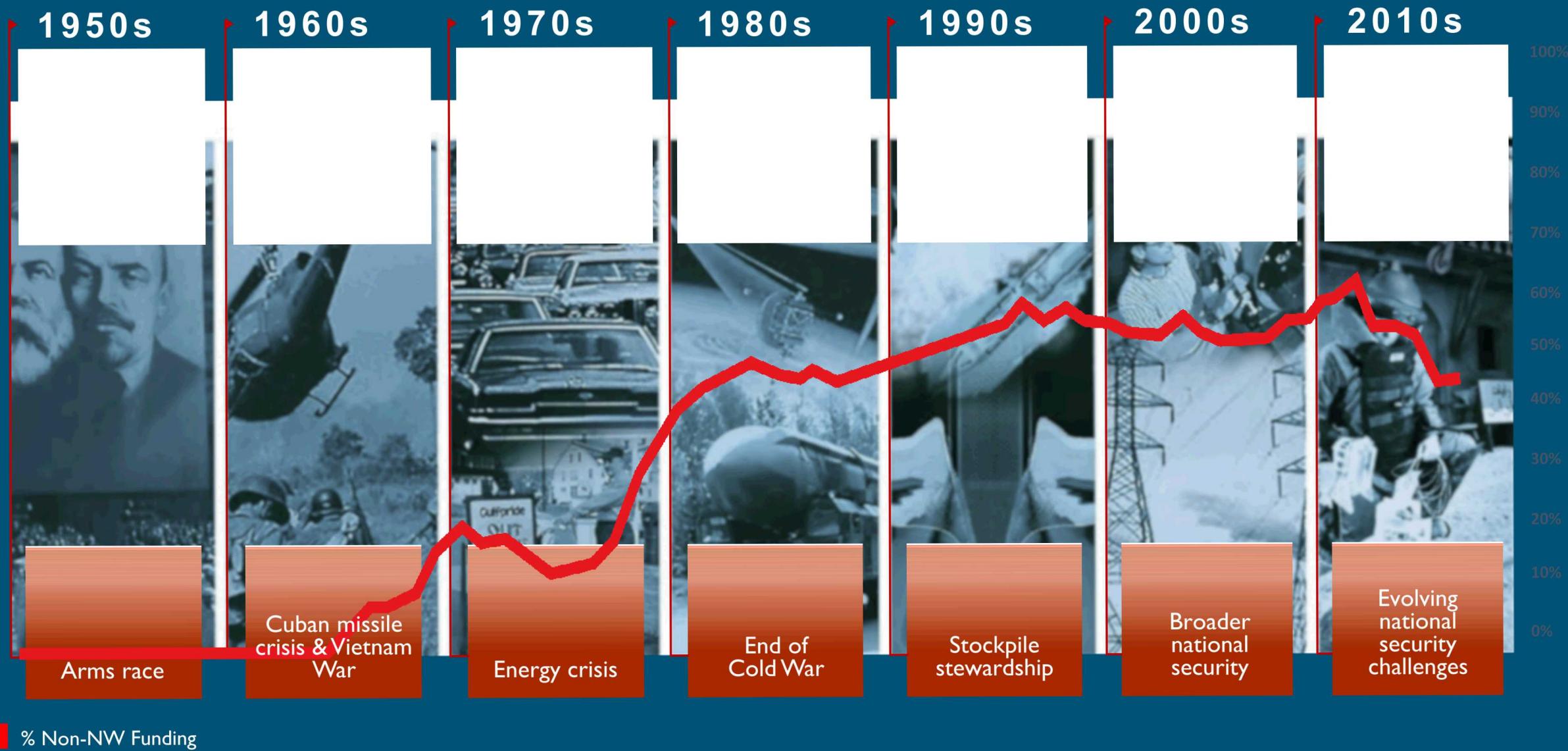
- **Kauai, Hawaii**
- **Pantex Plant**
Amarillo, Texas
- **Tonopah, Nevada**
- **Washington, D.C.**
- **Waste Isolation**
Pilot Plant (WIPP)
Carlsbad, New Mexico

OUR PURPOSE STATEMENT DEFINES WHAT WE DO

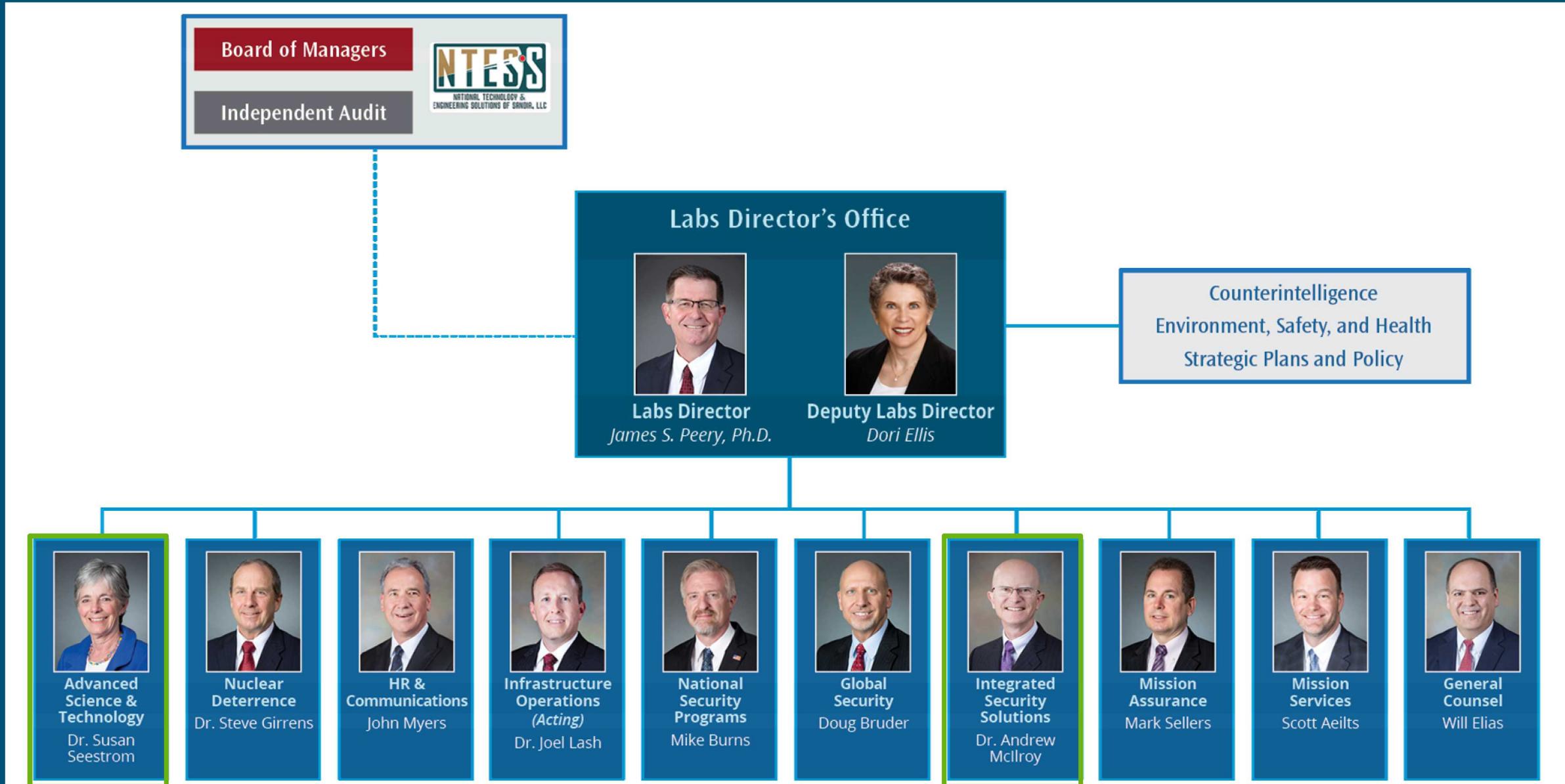


Sandia develops
advanced technologies
to ensure global peace

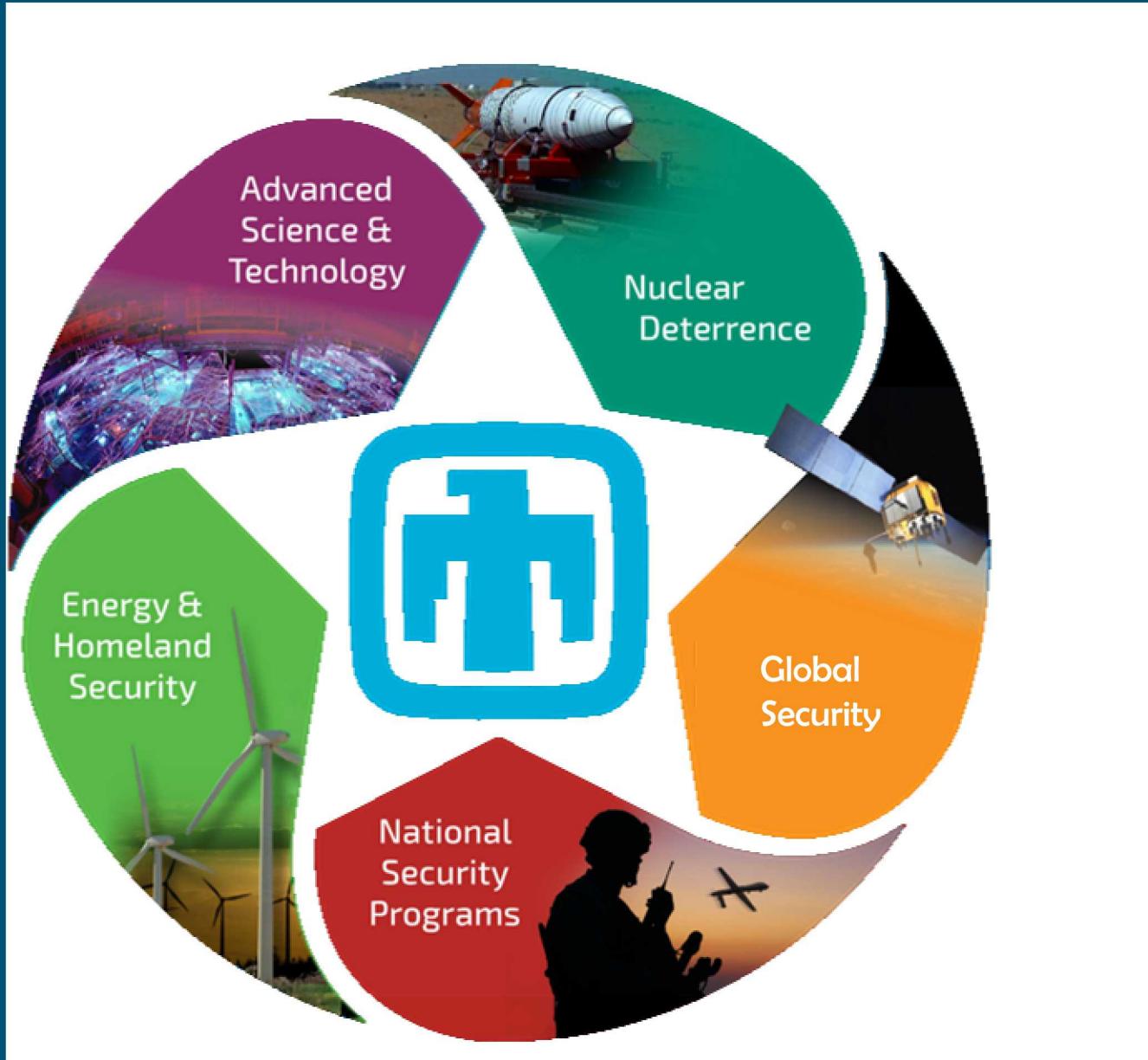
SANDIA ADDRESSES NATIONAL SECURITY CHALLENGES



SANDIA'S LEADERSHIP



SANDIA HAS FIVE MISSION AREAS



NUCLEAR DETERRENCE

Our primary mission drivers

Maintain the current U.S. nuclear weapons stockpile

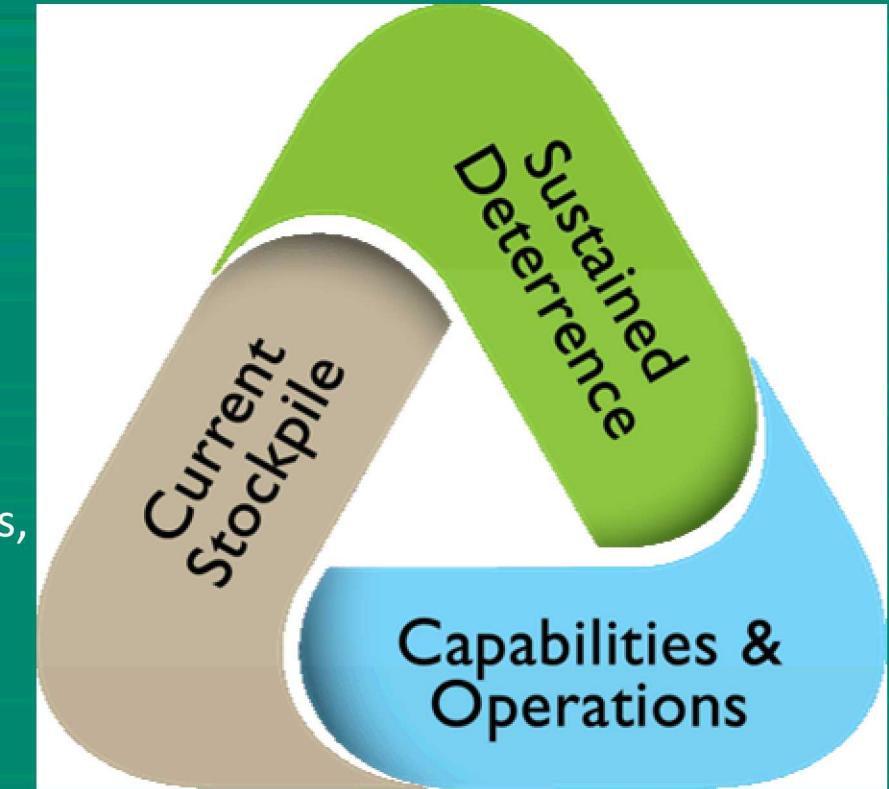
Continue the safety, security, and reliability of the current stockpile through Annual Assessment, surveillance, limited life component exchanges, significant finding investigations

Sustain a flexible and responsive stockpile into the future

Ensure U.S. nuclear deterrent effectiveness by extending warhead life and maintaining readiness to counter emerging and unconventional nuclear deterrent threats through Life Extension Programs, Alterations, Modifications, Technology Maturation, as well as Advanced & Exploratory work

Steward the long-term vitality of our capabilities, infrastructure, and operations

Continue the persistent commitment to world-class, multi-disciplinary staff, state-of-the-art labs, equipment, facilities, and safe/secure/quality/affordable operations



GLOBAL SECURITY



Protects the nation from threats at home and abroad

- Develop space- and ground-based sensor systems for monitoring emerging threats
- Supply technology, crisis response, and training to respond to a crisis associated with weapons of mass destruction
- Provide capabilities for protecting U.S. nuclear weapons and materials at fixed sites and in transit
- Produce systems that deter proliferation and verify compliance with international agreements using space-borne and ground-based sensing technology
- Lead global technical engagement to prevent the misuse of nuclear, chemical, biological, and radiological materials



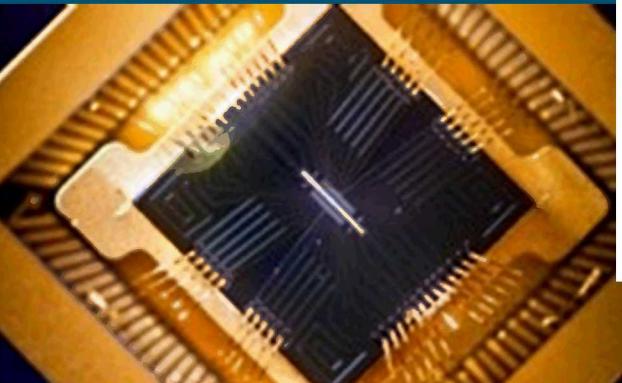
NATIONAL SECURITY PROGRAMS



Strengthens our nation's defenders



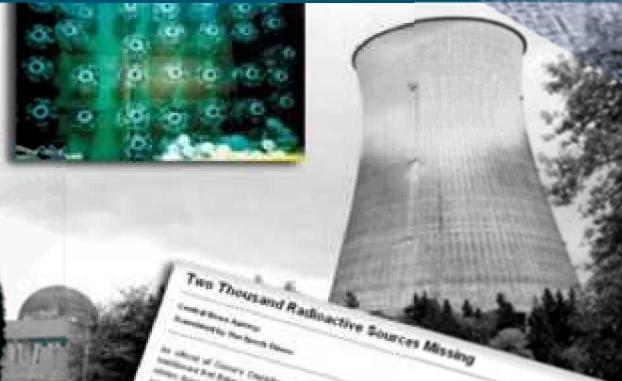
Information operations



Science & technology products

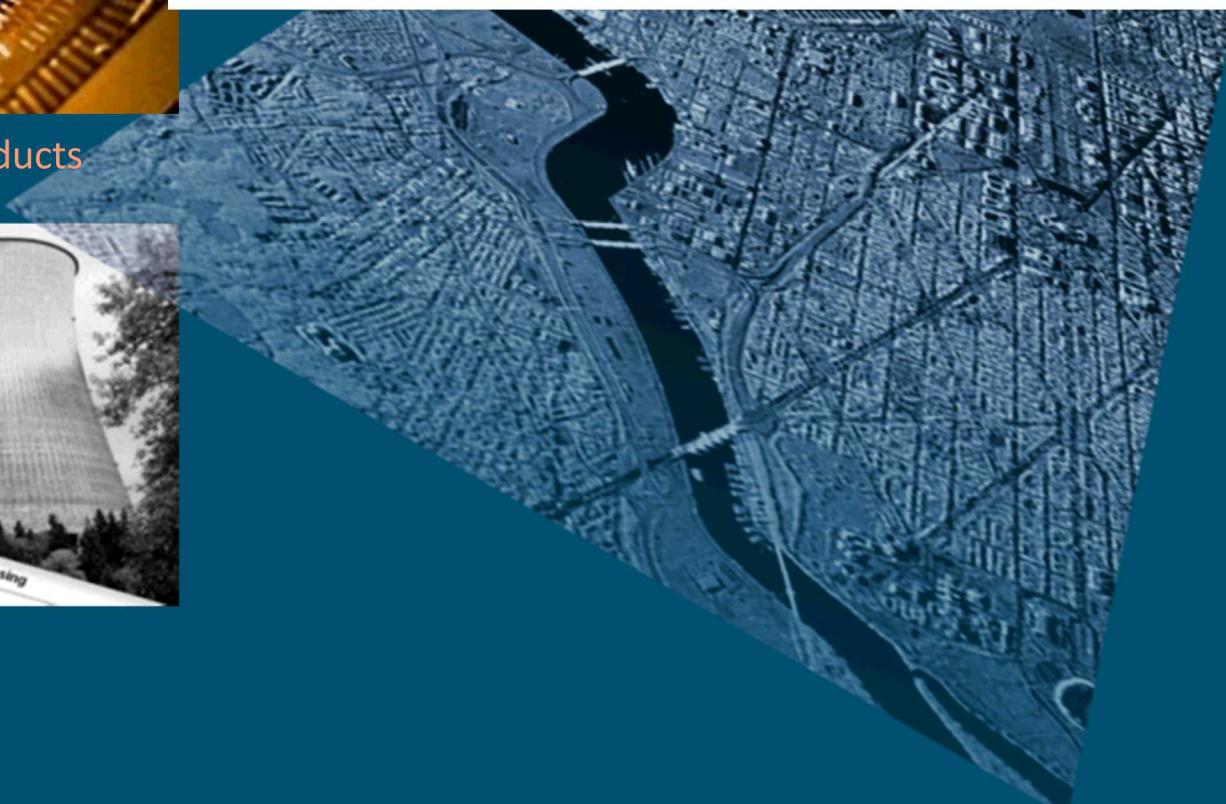


Integrated military systems



Proliferation assessment

Surveillance & reconnaissance



ADVANCED SCIENCE & TECHNOLOGY

Integrates multidisciplinary efforts to advance the science of the possible for Sandia's missions



WEAPONS SCIENCE & TECHNOLOGY

Provides Sandia with foundational science and engineering capabilities to ensure the nation's nuclear stockpile is safe, secure, and effective

OFFICE OF SCIENCE

Leads creative, hypothesis-driven inquiry in fundamental science to promote national security and international scientific leadership

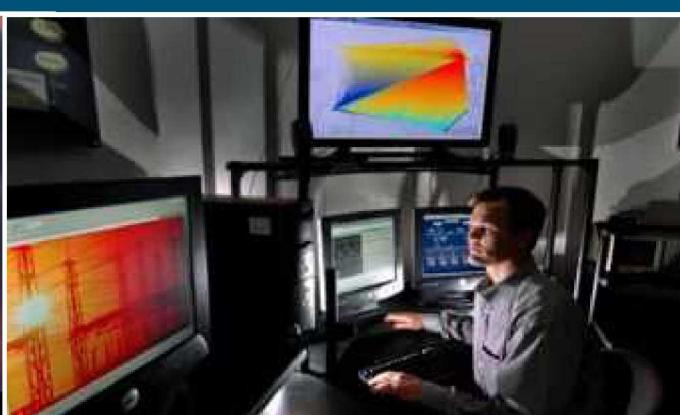
CHIEF RESEARCH OFFICER

Governs and leads research strategy and stewardship of capabilities at Sandia, including the Laboratory Directed Research and Development program. Responsible for leadership of technology transfer and Sandia's partnerships with universities, industry, and the state of New Mexico.

ENERGY & HOMELAND SECURITY



- Perform fundamental and applied R&D to support the resilience and security of the nation's energy system
- Provide protection for our nation's digital and physical critical infrastructures
- Reduce U.S. vulnerability to chemical, biological, radiological, and nuclear threats
- Accelerate transformative innovations in the transportation sector through foundational physical and computational research



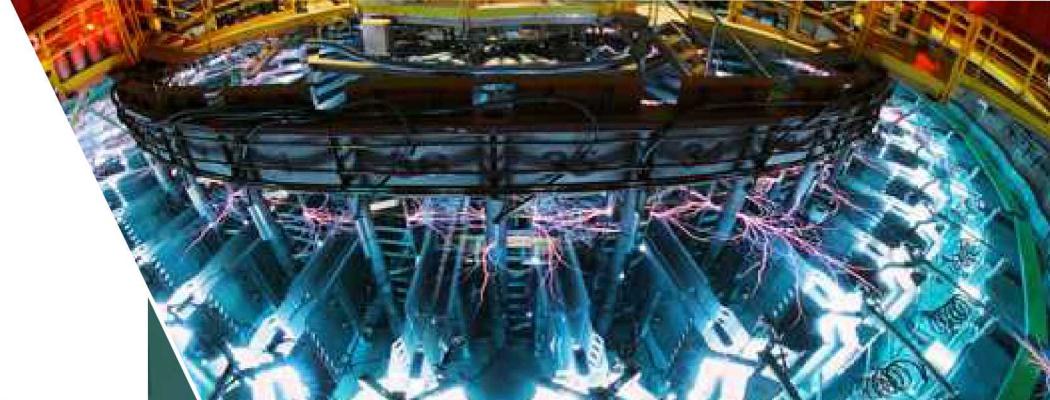
OUR RESEARCH FOUNDATIONS STEWARD THE SCIENCE & TECHNOLOGY INTEGRAL TO MISSION EXECUTION



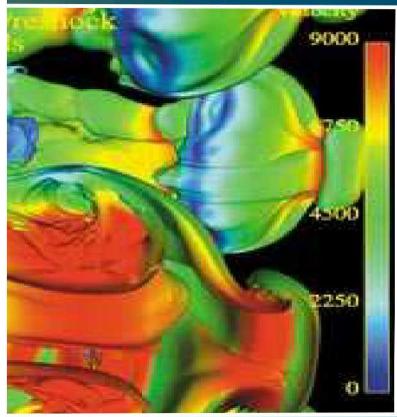
Nanodevices & Microsystems



Computing & Information



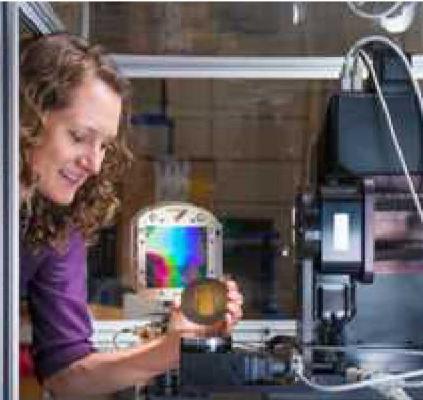
Radiation Effects & High Energy Density Science



Engineering Science



Earth Science

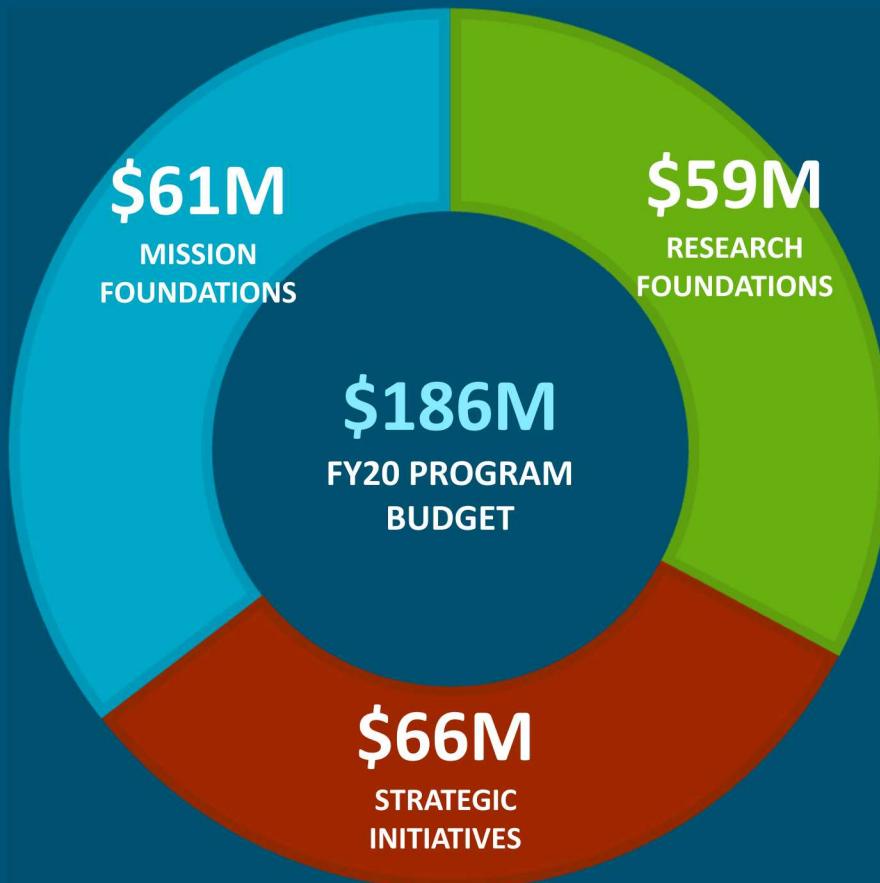


Materials Science



Bioscience

LABORATORY DIRECTED R&D (LDRD) BALANCES FOUNDATIONAL AND APPLIED INVESTMENTS



Research Foundations

Conduct fundamental discovery research fundamental to the national security mission needs.

Mission Foundations

Conduct applied research in areas directly relevant to current and anticipated missions.

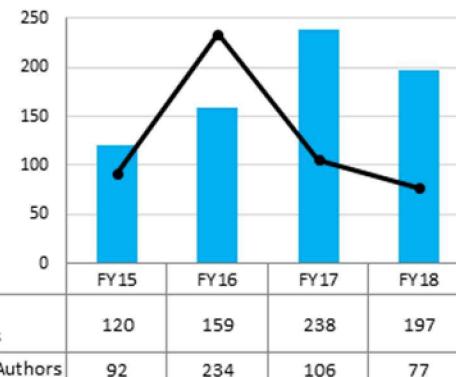
Strategic Initiatives

Promote strategic collaborations and CRO/Labs-directed initiatives.

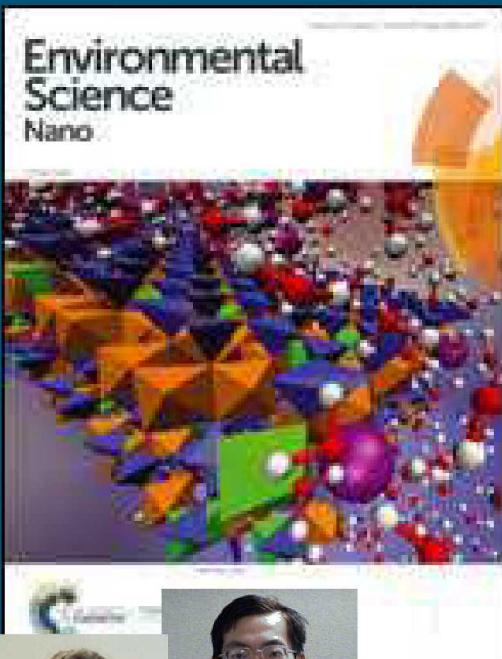
EARTH SCIENCE IMPACT

PUBLICATIONS/POSTERS/PRESENTATIONS/JOURNALS/BOOKS

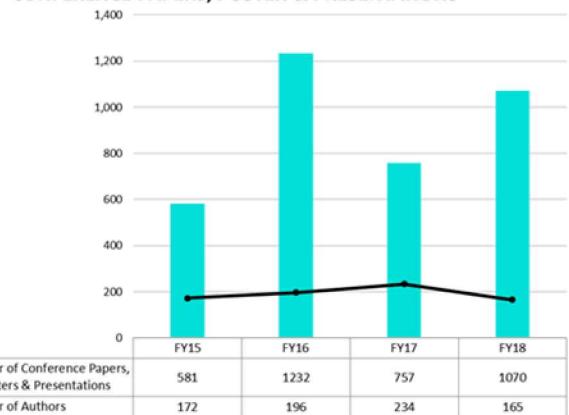
JOURNAL ARTICLES



Environmental Science Nano

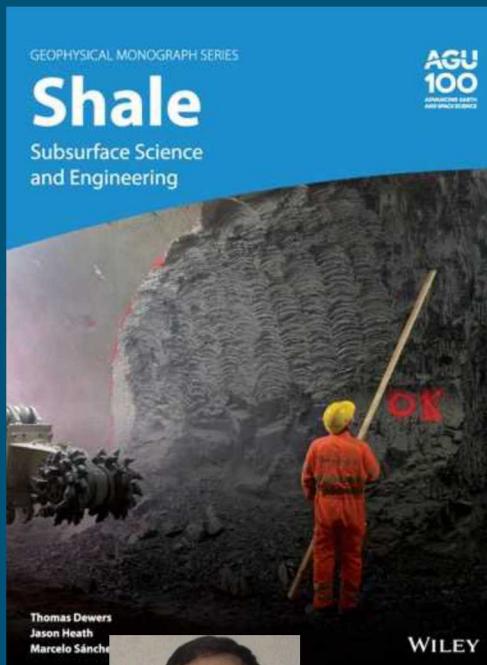


CONFERENCE PAPERS, POSTER & PRESENTATIONS

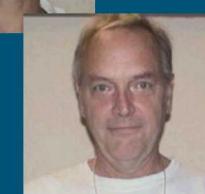


Anastasia Ilgen and Kevin Leung's BES paper, "Switching on" iron in clay minerals (Ilgen, Kukkadapu, Leung, and Washington, Environ. Sci.: Nano, 2019, 6, 1704-1715) was selected as one of the top 10% for *Environmental Science Nano*.

Tuan Ho & Yifeng Wang, *Enhancement of oil flow in shale nanopores by manipulating friction and viscosity*, *Physical Chemistry Chemical Physics*, Vol 21, No. 24, June 28, 2019



WILEY



Jason Heath, Thomas Dewers, and Marcelo Sanchez, *Shale: Subsurface Science and Engineering*. Part of a Geophysical Monograph Series.

