

INTEGRATED SECURITY SOLUTIONS OVERVIEW



PRESENTED BY



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.



Sandia develops
advanced technologies
to ensure global peace



A satellite view of Earth from space, showing the curvature of the planet and various cloud formations. The image is used as a background for the text.

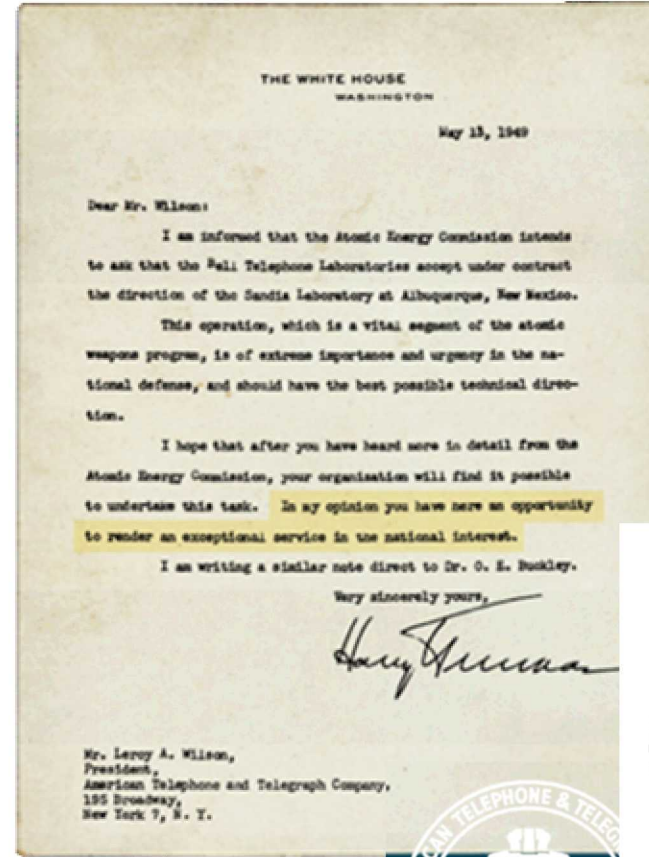
Our purpose statement

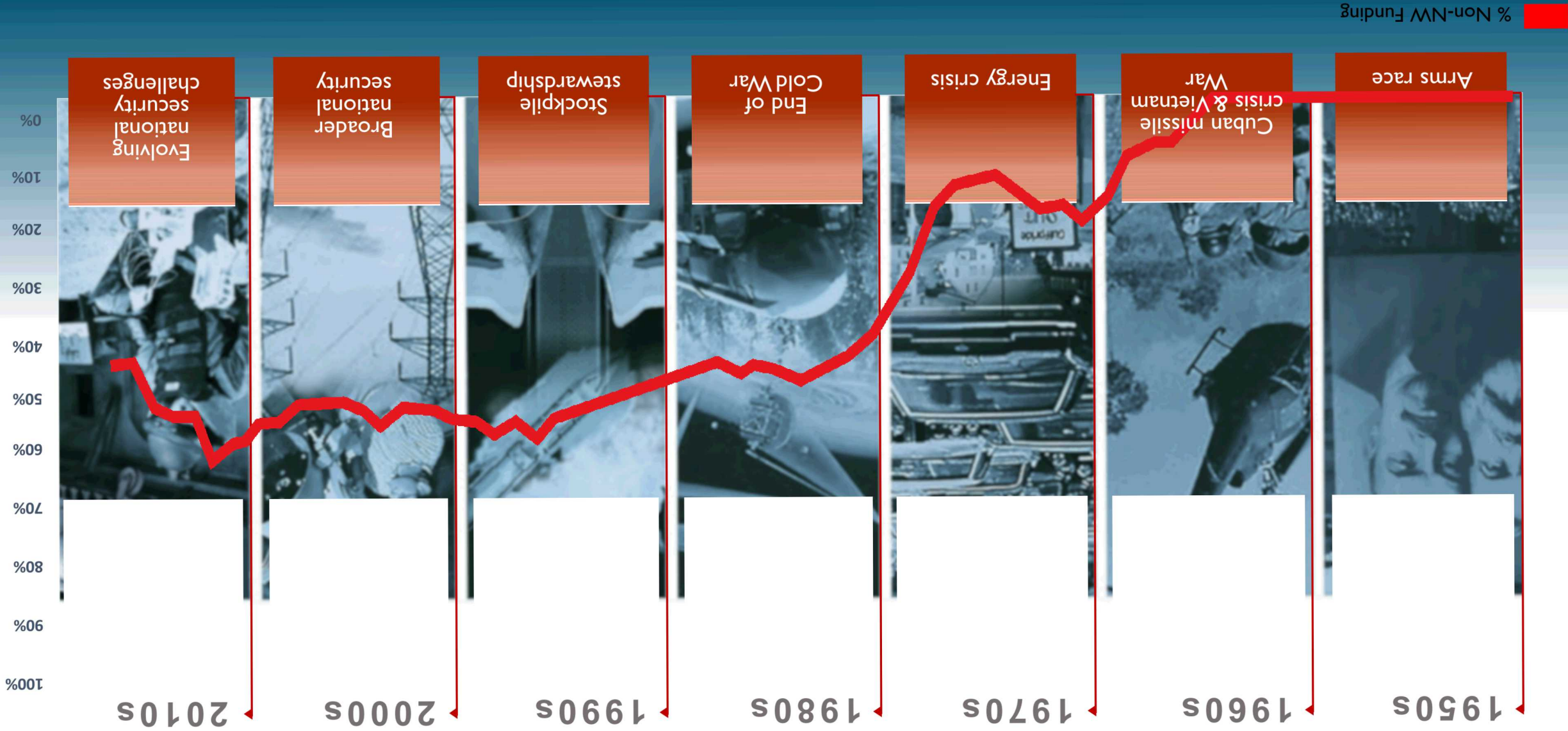
**Sandia develops
advanced technologies
to ensure global peace**

SANDIA'S HISTORY IS TRACED TO THE MANHATTAN PROJECT

...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





An aerial photograph showing the Sandia Main Sites. The image is split into two parts: the left side shows the Albuquerque, New Mexico site with its various buildings and parking lots, and the right side shows the Livermore, California site with its large, modern building complex. The text 'SANDIA MAIN SITES' is overlaid in the center, with 'Albuquerque, New Mexico' and 'Livermore, California' listed below it.

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.

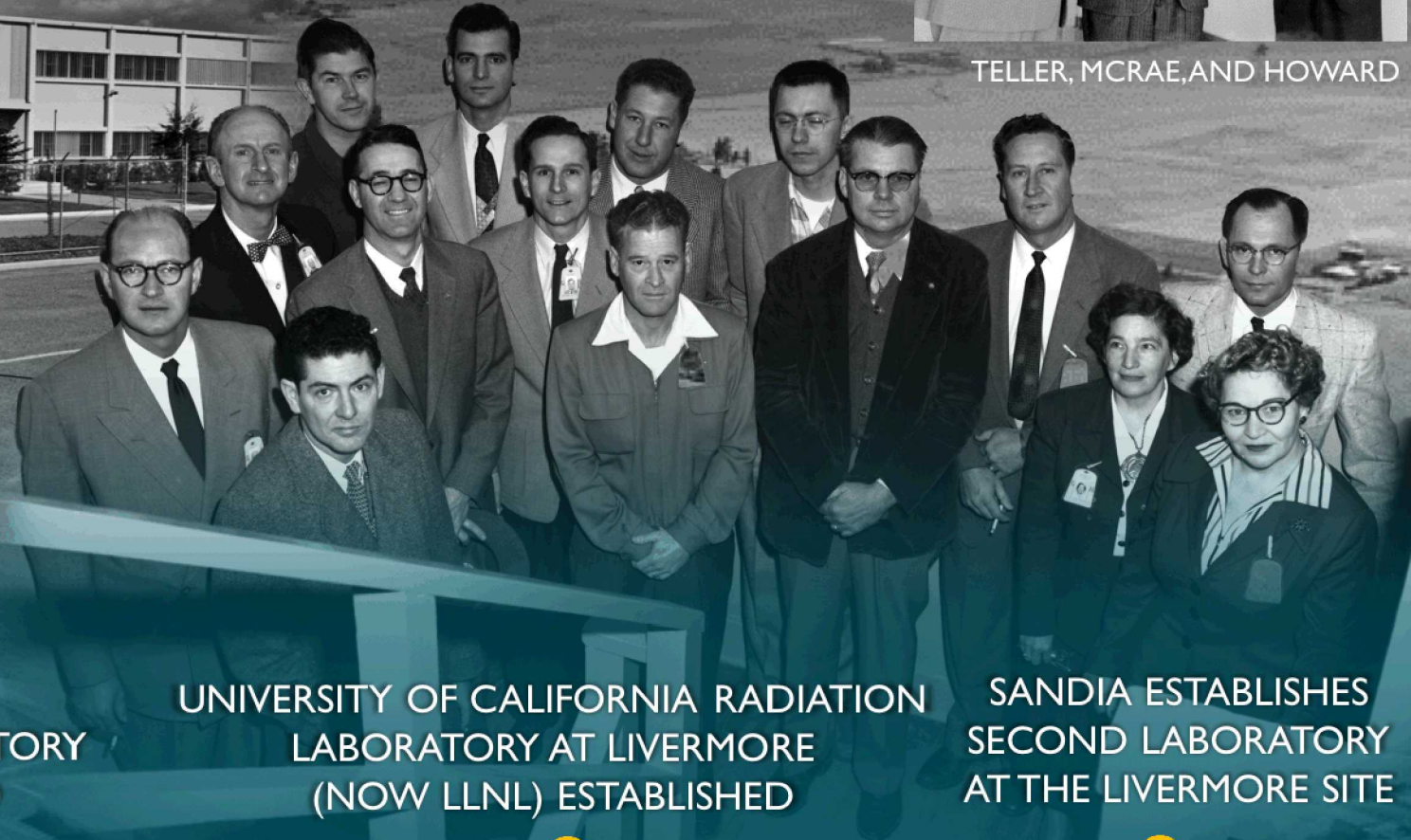
ACTIVITY LOCATIONS

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

SANDIA ESTABLISHES A SECOND LABORATORY IN CALIFORNIA



TELLER, MCRAE, AND HOWARD



SANDIA CORPORATION
LIVERMORE LABORATORY
FOR THE ATOMIC ENERGY COMMISSION

LOS ALAMOS
CREATES Z DIVISION

SANDIA LABORATORY
ESTABLISHED

UNIVERSITY OF CALIFORNIA RADIATION
LABORATORY AT LIVERMORE
(NOW LLNL) ESTABLISHED

SANDIA ESTABLISHES
SECOND LABORATORY
AT THE LIVERMORE SITE

1945

1949

1952

1956



ADVANCED SCIENCE &
TECHNOLOGY
DR. SUSAN SEESTROM



GLOBAL SECURITY
DOUG BRUDER



INTEGRATED
SECURITY SOLUTIONS
DR. ANDY MCILROY



NATIONAL SECURITY
PROGRAMS
MIKE BURNS



NUCLEAR DETERRENCE
DR. STEVE GIRRENS



Board of Managers

Independent Audit



SANDIA LABS
DIRECTOR'S OFFICE



DR. STEPHEN
YOUNGER
LABS DIRECTOR



DORI ELLIS
DEPUTY LABS
DIRECTOR



GENERAL COUNSEL
WILL ELIAS



HR & COMMUNICATIONS
JOHN MYERS



INFRASTRUCTURE
OPERATIONS
JOHN CLYMO



MISSION ASSURANCE
MARK SELLERS



MISSION SERVICES
SCOTT AEILTS



CHEMISTRY, COMBUSTION,
& MATERIALS SCIENCE
BOB HWANG
+ ND, AS&T PROGRAMS



ENERGY & EARTH
SYSTEMS
CAROL ADKINS
+ ND, AS&T, GS PROGRAMS
*CROSS DIVISION INITIATIVES



CBRN DEFENSE & ENERGY
TECHNOLOGIES
ANUP SINGH
+ AS&T, GS PROGRAMS
*CROSS DIVISION INITIATIVES



HOMELAND SECURITY &
DEFENSE SYSTEMS
RICHARD GRIFFITH (ACTING)
+ ND, AS&T, GS PROGRAMS
*CROSS DIVISION INITIATIVES



INTEGRATED SECURITY SOLUTIONS | DIVISION 8000



ASSOCIATE LABS
DIRECTOR
DR. ANDY MCILROY

CALIFORNIA LABORATORY,
ENERGY & HOMELAND SECURITY
PORTFOLIO



CA WEAPON SYSTEMS
ENGINEERING
MIKE HARDWICK



CA WEAPON
COMPONENTS
ENGINEERING
TEDD ROHWER



E/HS PORTFOLIO, NUCLEAR
DETERRENCE PROGRAM
MANAGEMENT, & CA
BUSINESS OPERATIONS
MARCEY HOOVER



CA SITE OPERATIONS
PAM MCKEEVER

NUCLEAR
DETERRENCE

OPERATIONS



CA WEAPONS

W80-4 and Mk21 Fuze programs, Livermore stockpile, advanced & exploratory systems, nuclear deterrence capabilities (surety systems, gas transfer systems, handling gear, and telemetry)

DIVISION

Program execution and stewardship of the California site

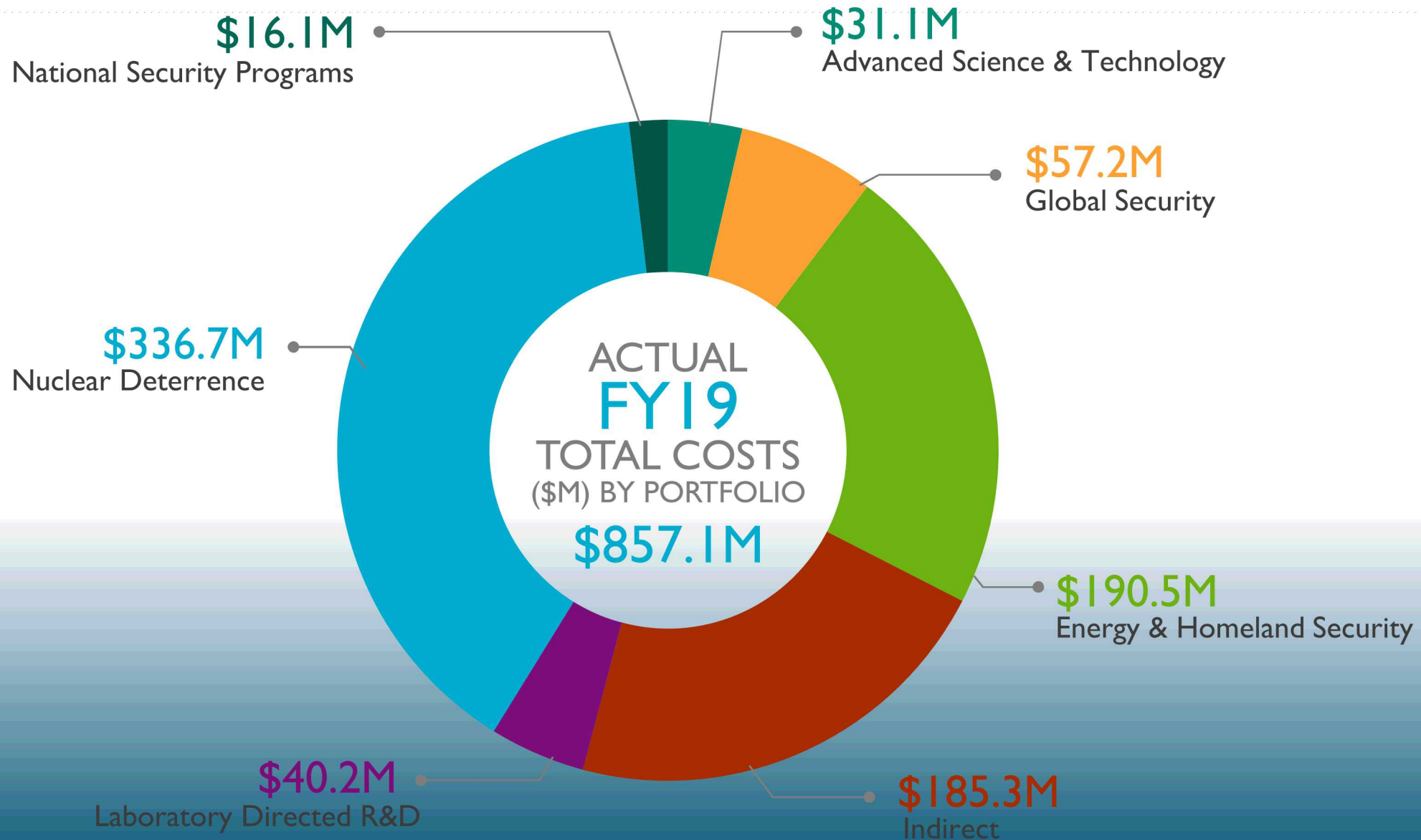
E/HS PORTFOLIO

Program management direction of work in support of the Department of Energy (DOE) and Department of Homeland Security (DHS)

RESEARCH FOUNDATIONS

Bioscience and Earth Science Research Foundations and stewardship for the Joint Bioenergy Institute (JBEI) and the Combustion Research Facility (CRF)

FY19 INTEGRATED SECURITY SOLUTIONS | TOTAL COSTS BY PORTFOLIO

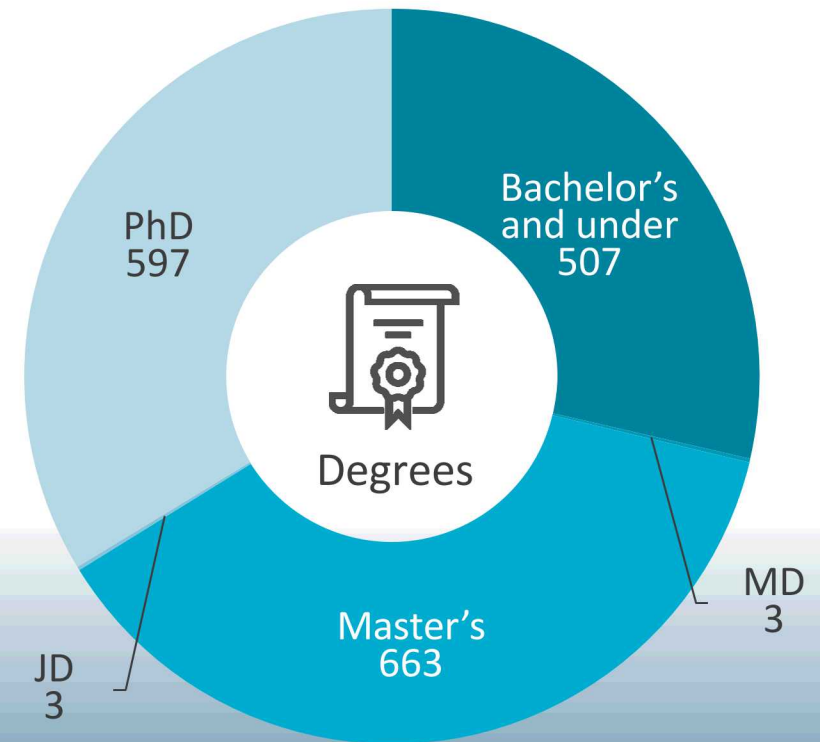
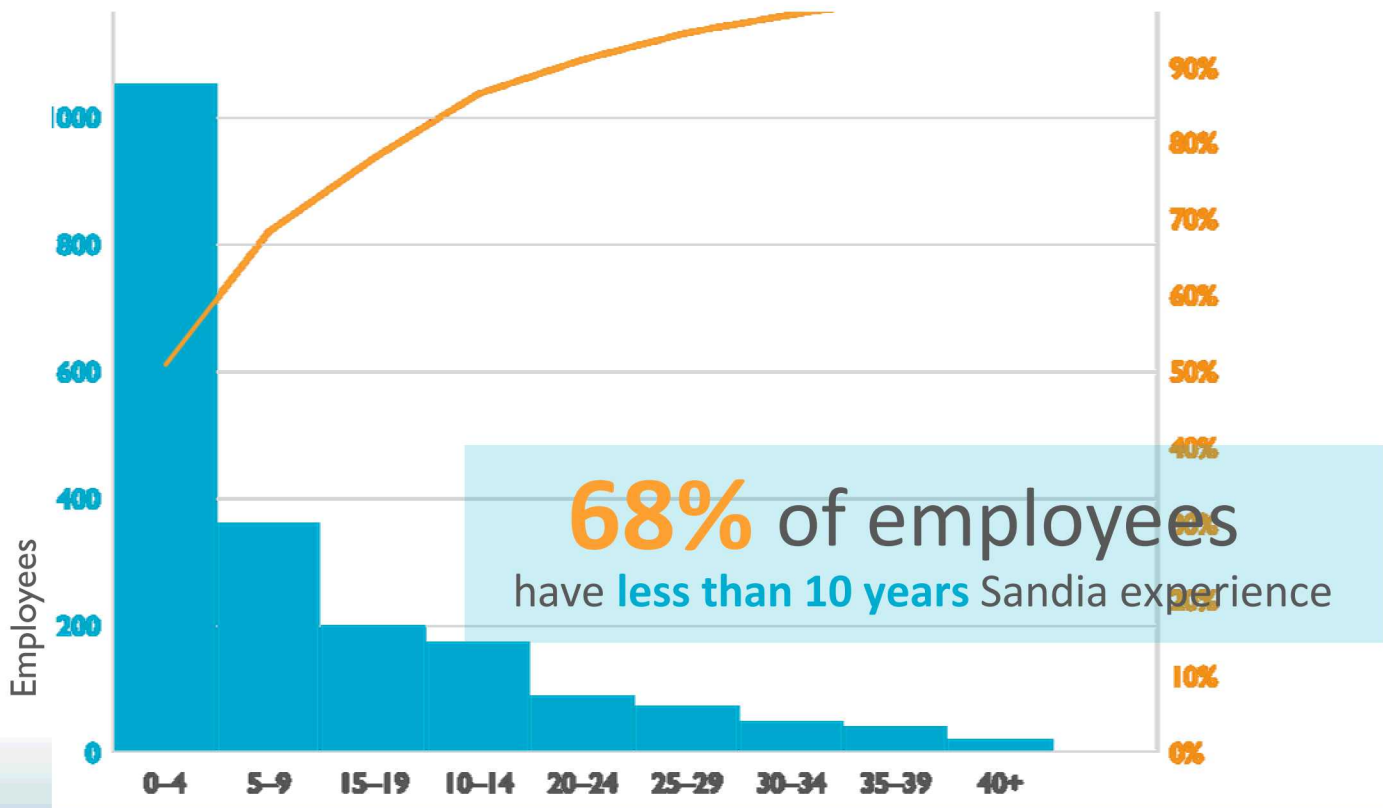


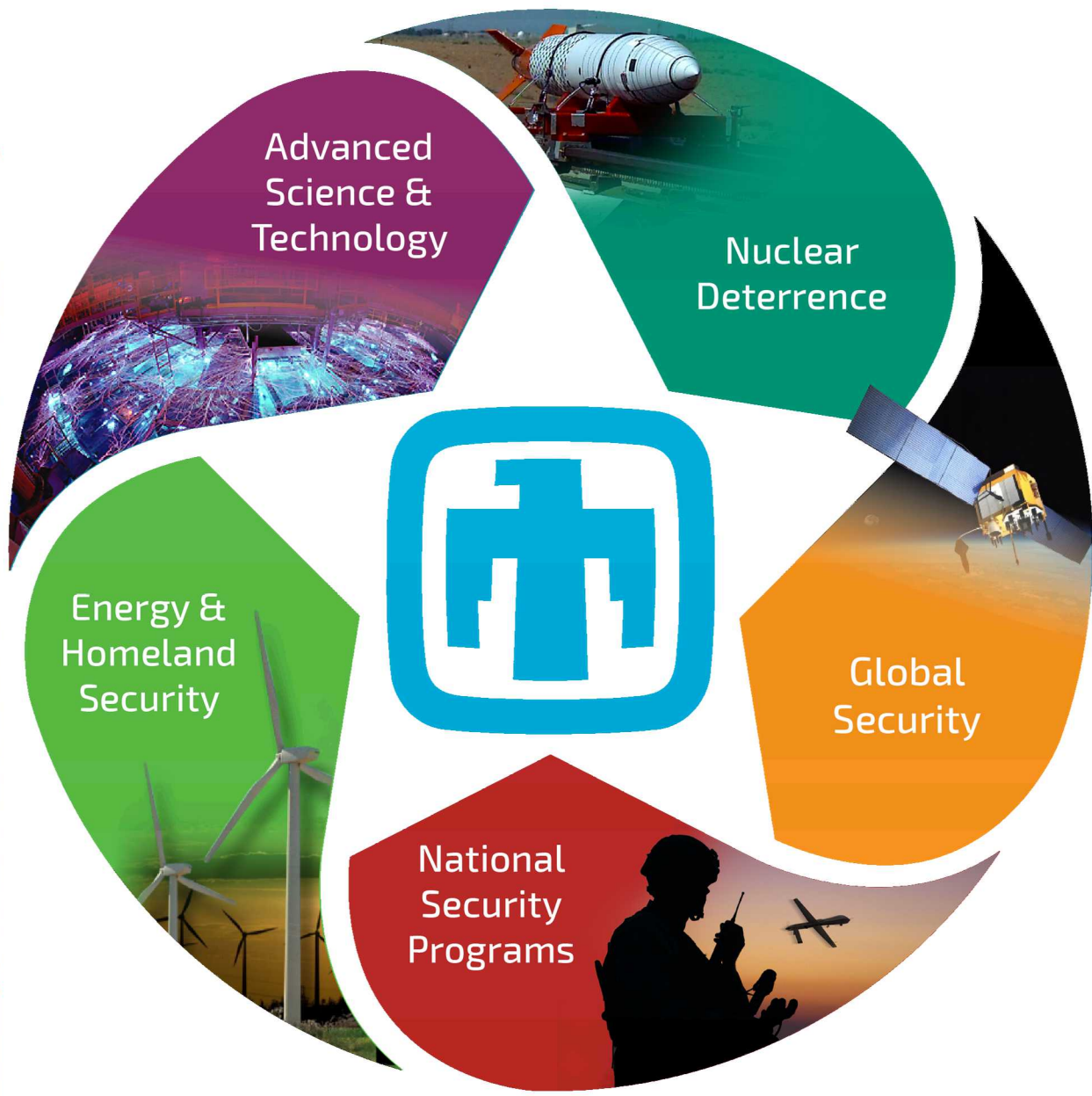


YEARS OF EXPERIENCE & DEGREES | 2,070 EMPLOYEES



All Employees (regular, limited-term, & post-doc's)





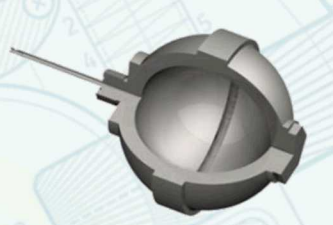
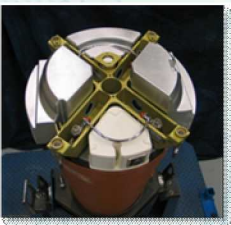
STOCKPILE SYSTEMS

B83 | MK21/W87 | ALCM/W80-1 | W84



COMPONENTS

- SURETY SYSTEMS
- JOINT TEST TELEMETRY INSTRUMENTATION
- GAS TRANSFER SYSTEMS
- HANDLING GEAR



MODERNIZATION PROGRAMS

- W80-4
- B61-12 LEP
- MK21 FLITZ
- W88 ALT 370
- W87-1



GLOBAL SECURITY

Protects the U.S. from threats

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



ISS



NATIONAL SECURITY PROGRAMS

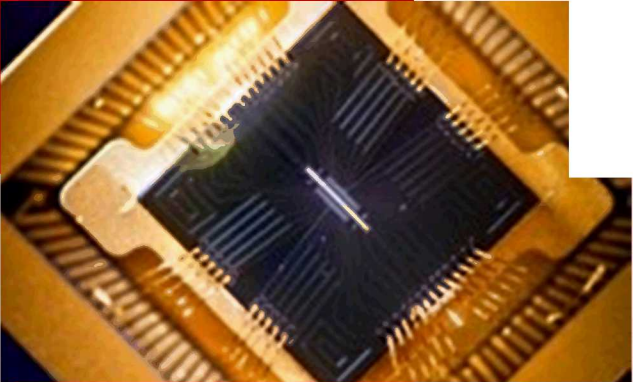
Strengthens our nation's defenders

ISS

Surveillance &



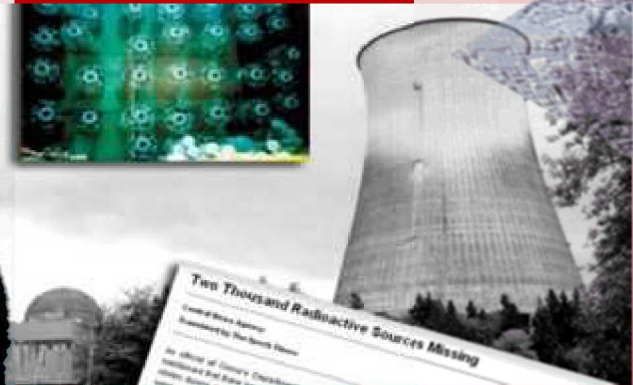
Information Operations



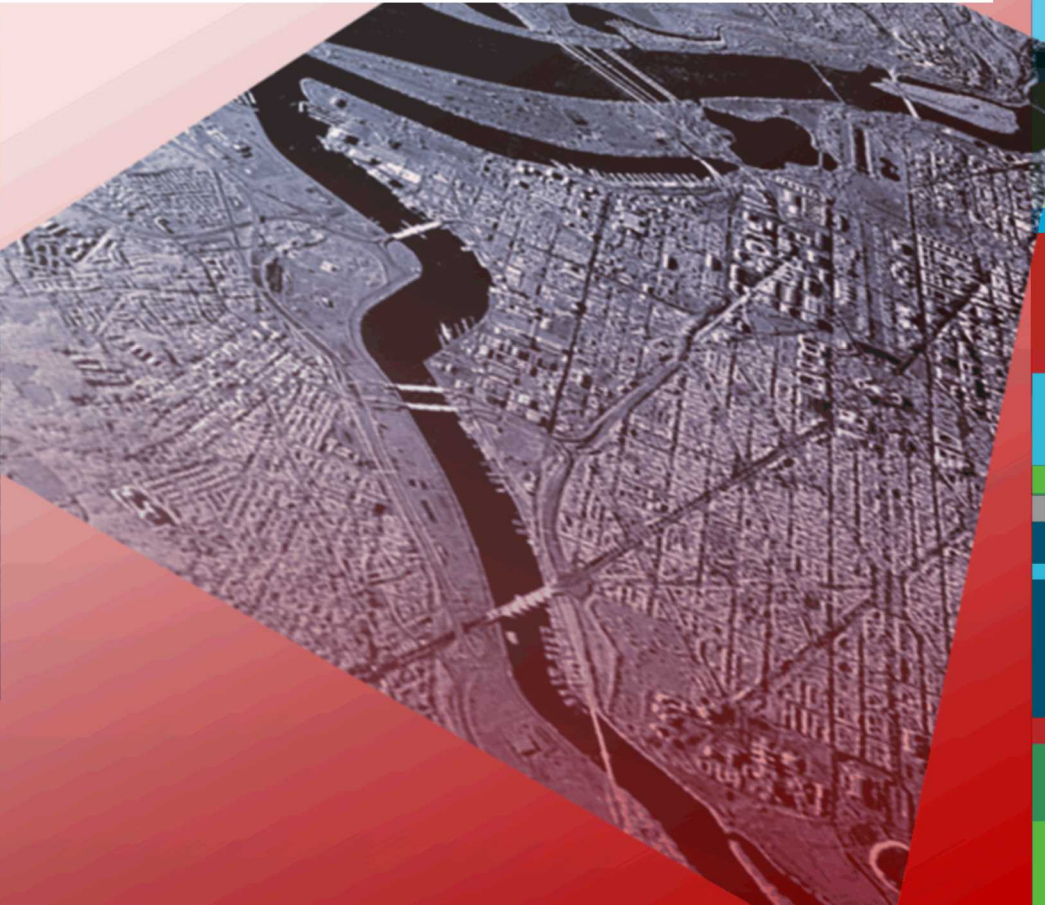
Science & Technology Products



Integrated Military Systems

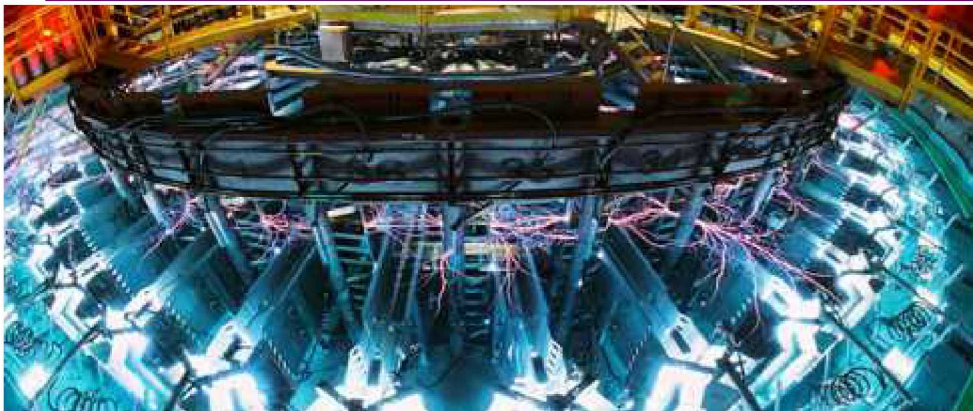


Proliferation Assessment



Research Foundations play an integral role in mission delivery

Nanodevices & Microsystems



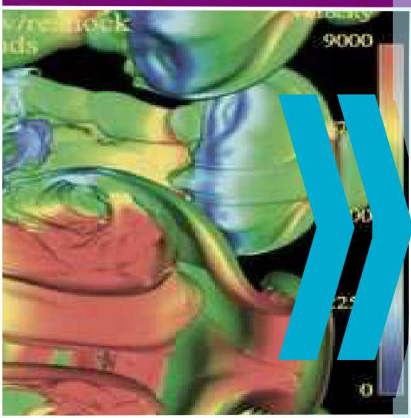
Radiation Effects & High-Energy Density Science



Materials Science



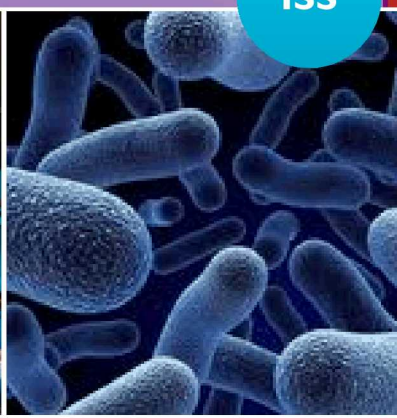
Computing & Information Science



Engineering Science



Earth Science



Bioscience



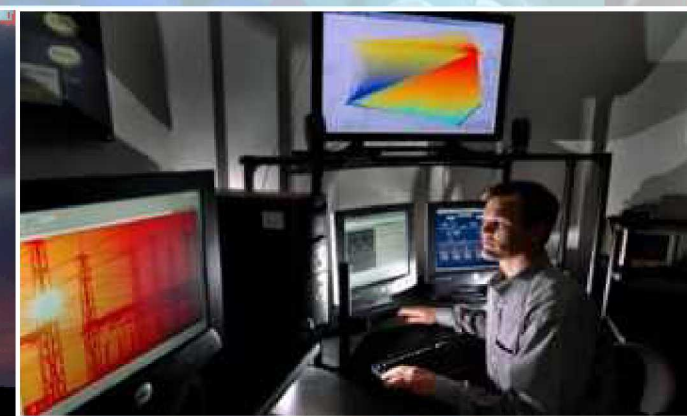
ISS

19

ENERGY & HOMELAND SECURITY

Innovates for a secure future

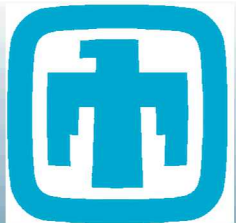
- Perform fundamental and applied R&D to support the resilience and security of the nation's energy system
- Provide protection for our nation's digital and physical critical infrastructures
- Reduce U.S. vulnerability to chemical, biological, radiological, and nuclear threats
- Accelerate transformative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



WHY AN ENERGY & HOMELAND SECURITY PORTFOLIO?



Sandia has a special relationship with both these customers codified in legislation and M&O contract



ENHANCE THE RESILIENCE
OF THE NATION'S CRITICAL
INFRASTRUCTURES TO NATURAL
AND ANTHROPOGENIC THREATS

SANDIA'S CORE SYSTEMS
ENGINEERING CAPABILITY IS KEY
TO TACKLING THE COMPLEX
CHALLENGES OF DOE AND DHS



Commitment to and innovation for the nation's energy & homeland security



TRANSPORTATION ENERGY & SYSTEMS

Bob Hwang

Program Area Director

Provide transformative
solutions in the
transportation sector



SECURE ENERGY & EARTH SYSTEMS

Carol Adkins

Program Area Director

Create solutions for
a safe, secure, and
resilient energy future



TRANSPORTATION ENERGY & SYSTEMS



ENERGY & HOMELAND SECURITY PORTFOLIO



**Andy
McIlroy**
Associate
Labs Director



**Marcey
Hoover**
Director

SECURE ENERGY & EARTH SYSTEMS



CBRN DEFENSE



HOMELAND INFRASTRUCTURE SECURITY & RESILIENCE



CBRN DEFENSE

Anup Singh

Program Area Director

Reduce the nation's
vulnerability to chemical,
biological, radiological,
and nuclear threats



HOMELAND INFRASTRUCTURE SECURITY & RESILIENCE

Heidi Ammerlahn

Program Area Director

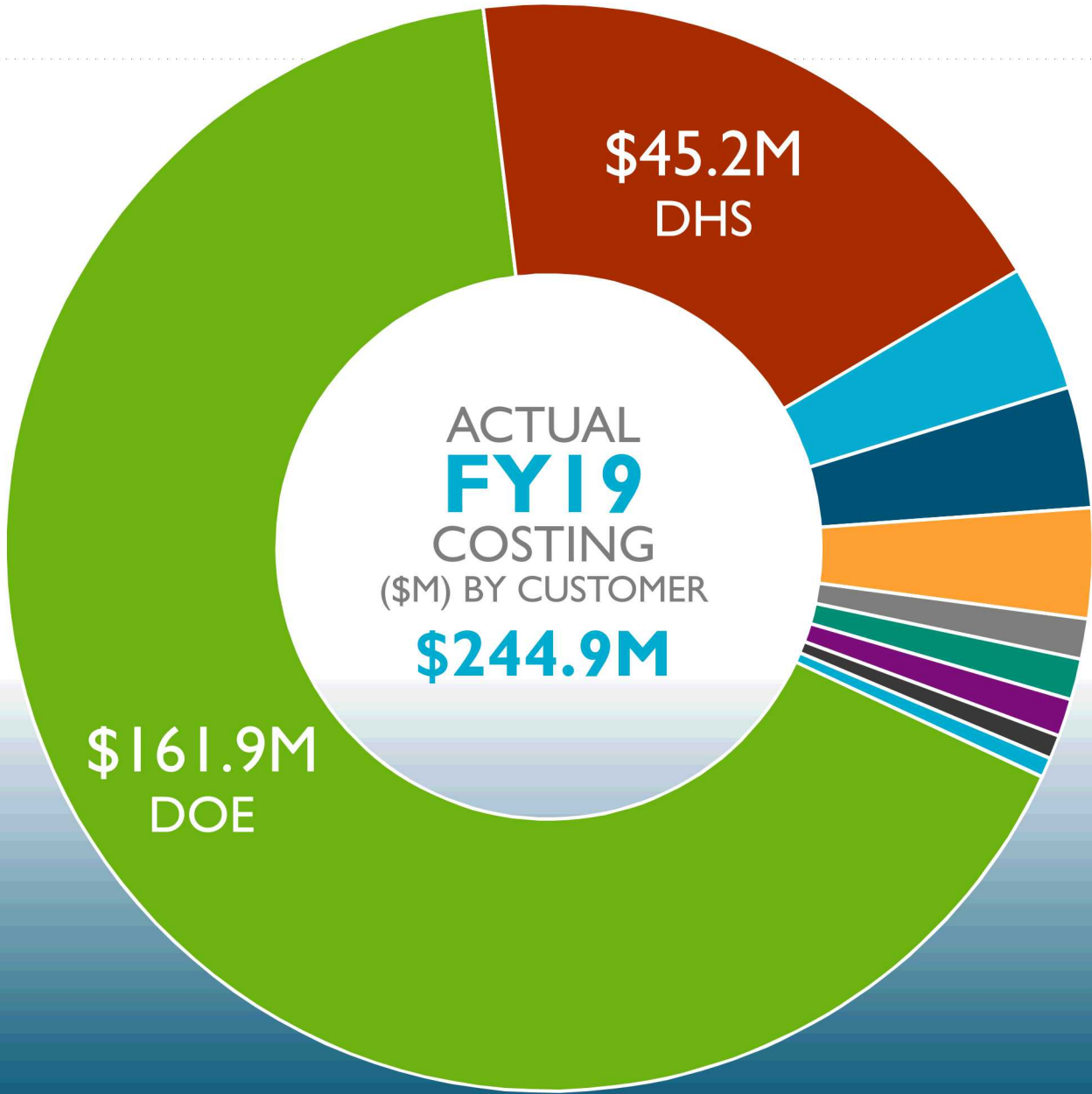
Richard Griffith

Acting Program Area Director

Provide protection for our
nation's digital and physical
critical infrastructures

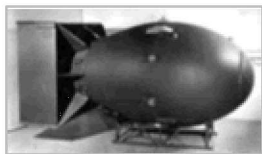


FY19 E/HS COSTING BY CUSTOMER



- DOE – \$161.9M**
Department of Energy
- DHS – \$45.2M**
Department of Homeland Security
- NRC – \$9.2M**
Nuclear Regulatory Commission
- DOD – \$8.8M**
Department of Defense
- IEWs – \$8M**
Inter-Entity Work
- CRADAs – \$3M**
Cooperative Research & Development Agreements
- NFEs – \$3M**
Non-Federal Entities
- NASA – \$2.7M**
National Aeronautics & Space Administration
- DOT – \$1.7M**
Department of Transportation
- Other – \$1.4M**
(HHS, EPA, DOC, DOL, Other)

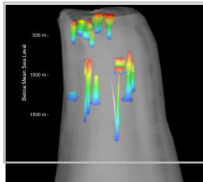
HISTORY OF THE SANDIA ENERGY PROGRAM



SANDIA WAS BORN AS A NUCLEAR WEAPONS ENGINEERING LABORATORY WITH DEEP SCIENCE AND ENGINEERING CAPABILITIES



1970's ENERGY CRISIS SPAWNED THE START OF SIGNIFICANT ENERGY WORK



STRATEGIC PETROLEUM RESERVE



SYNTHETIC DIAMOND DRILL BIT



WASTE ISOLATION PILOT PLANT (WIPP) EVALUATION



SCALED WIND FARM TECHNOLOGY (SWiFT) FACILITY COMMISSIONED



3-D PRINTING, ADDITIVE MANUFACTURING, AND PROCESSES TO CREATE MOLDS FOR WIND TURBINE BLADES.



OUR CORE NW COMPETENCIES ENABLED US TO TAKE ON ADDITIONAL LARGE NATIONAL SECURITY CHALLENGES



SOLAR TOWER OPENS



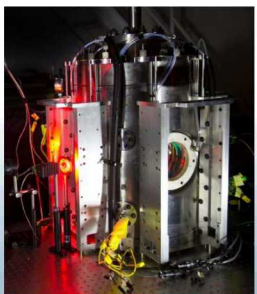
COMBUSTIONS RESEARCH FACILITY (CRF) OPENS



IDENTIFIED AS LEAD LAB FOR YUCCA MOUNTAIN



LARGE-SCALE POOL FIRE TESTS OF LIQUEFIED NATURAL GAS (LNG) ON WATER



CO-OPTIMA: JOINT DESIGN OF OPTIMIZING FUELS AND ENGINES

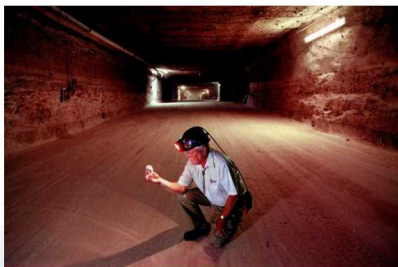


SANDIA TEAMED WITH ORNL TO EXPLORE ENERGY STORAGE FOR ENHANCED ELECTRICITY RESILIENCY IN PUERTO RICO

SECURE ENERGY & EARTH SYSTEMS



SUPPORT THE RESILIENCE & SECURITY OF THE NATION’S ENERGY SYSTEM BY PERFORMING FUNDAMENTAL & APPLIED R&D



RENEWABLE ENERGY

ENERGY EFFICIENCY

GRID MODERNIZATION AND ENERGY STORAGE

FOSSIL ENERGY

DOE-MANAGED NUCLEAR WASTE

NUCLEAR ENERGY SAFETY AND SECURITY

NUCLEAR ENERGY FUEL CYCLE

FY19 TOTAL COSTS \$151.8M

U.S. DEPARTMENT OF
ENERGY | Energy Efficiency & Renewable Energy

U.S. DEPARTMENT OF
ENERGY | Electricity Delivery & Energy Reliability

U.S. DEPARTMENT OF
ENERGY | Fossil Energy
OFFICE OF OIL & NATURAL GAS

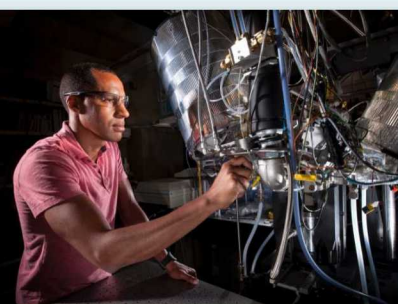
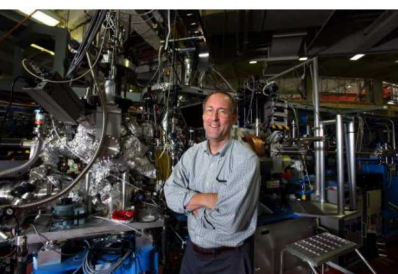
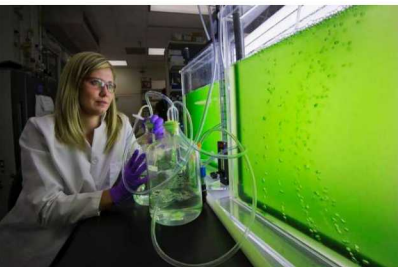
U.S. DEPARTMENT OF
ENERGY | OFFICE OF ENVIRONMENTAL MANAGEMENT

U.S. DEPARTMENT OF
ENERGY | Nuclear Energy





ACCELERATE TRANSFORMATIVE INNOVATIONS IN THE TRANSPORTATION SECTOR BY PROVIDING FOUNDATIONAL PHYSICAL & COMPUTATIONAL RESEARCH



BIOMASS
HYDROGEN & FUEL CELLS
VEHICLE TECHNOLOGIES

FY19 TOTAL COSTS \$37.6M

U.S. DEPARTMENT OF
ENERGY | Energy Efficiency &
Renewable Energy



HISTORY OF SANDIA'S HOMELAND SECURITY PROGRAMS

SUCCESSFUL
AMMONIUM
NITRATE
EXPLOSIVE TEST



MUNICH OLYMPICS
TERRORIST
ATTACKS



OK CITY BOMBING



9/11



TWA 800



ANTHRAX LETTERS



UNDERWEAR
BOMBER

BOSTON MARATHON BOMBING



1970s

1980s

1990s

2000-2010

2010-2018

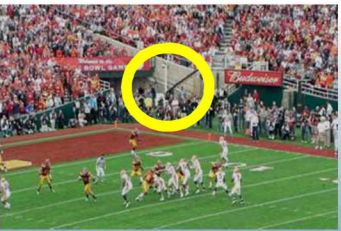
DOE - DEFENSE
OF CITIES
AGAINST
BIOLOGICAL
WEAPONS



Aum Shinrikyo



NATIONAL INFRASTRUCTURE
SIMULATION AND ANALYSIS
CENTER (NISAC)



RAPIDLY DEPLOYABLE
CHEMICAL DETECTOR
SYSTEM (RDCDS) - 2008
ROSE BOWL AND SUPER
BOWL



BIOWATCH INDOOR REACHBACK
CENTER (BIRC)



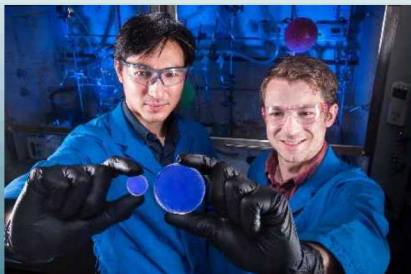
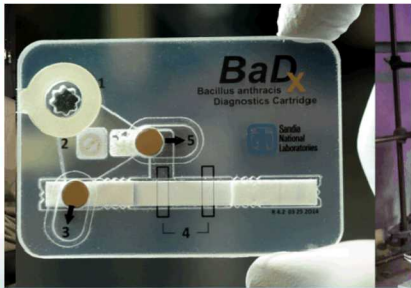
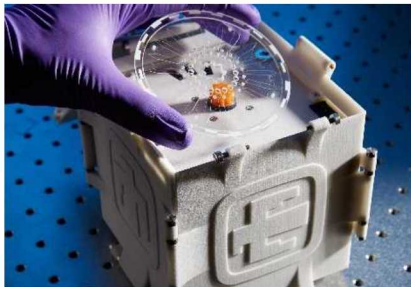
SPINDX LAB-ON-
A-DISK



BADX - ANTHRAX
DETECTION



REDUCE THE NATION’S VULNERABILITY TO CHEMICAL, BIOLOGICAL, RADIOLOGICAL, & NUCLEAR THREATS



FY19 TOTAL COSTS \$13.5M



Homeland Security



National Institutes of Health





INCREASE OUR NATION’S DIGITAL AND PHYSICAL CRITICAL INFRASTRUCTURE RESILIENCE TO NATURAL AND MAN-MADE THREATS



FY19 TOTAL COSTS \$42M





BATTERIES

ASC CODES

MICROELECTRONICS

NON-PROLIFERATION
MONITORING, MODELING

NUCLEAR WEAPONS,
RADIATION EFFECTS

HAZARDOUS MATERIALS & TRANSPORTATION ENERGY,
LOW-POWER WMD DIAGNOSTICS

COMPUTATIONAL MODELING, WMD PROTECTION/RESPONSE,
AIR-2-ELECTRONS MODELING

DIGITAL SECURITY,
POWER ELECTRONICS

NUCLEAR WASTE REPOSITORIES,
BORDER/PHYSICAL SECURITY

SOLAR TOWER, GRID EFFECTS,
DISASTER PLANNING/RESPONSE

Thank you.



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