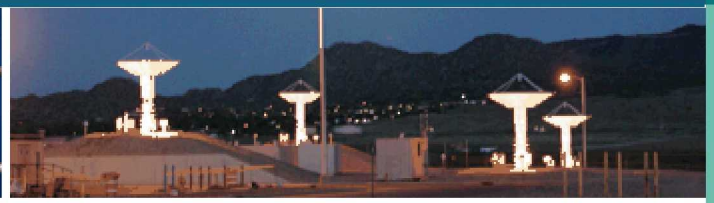
SAND2020-1169PE

Sandia's Strategic Partnership Projects Portfolio (SPP)/Nuclear Deterrence (ND) Synergy



Oppenheimer Science and Energy Leadership Program Visit

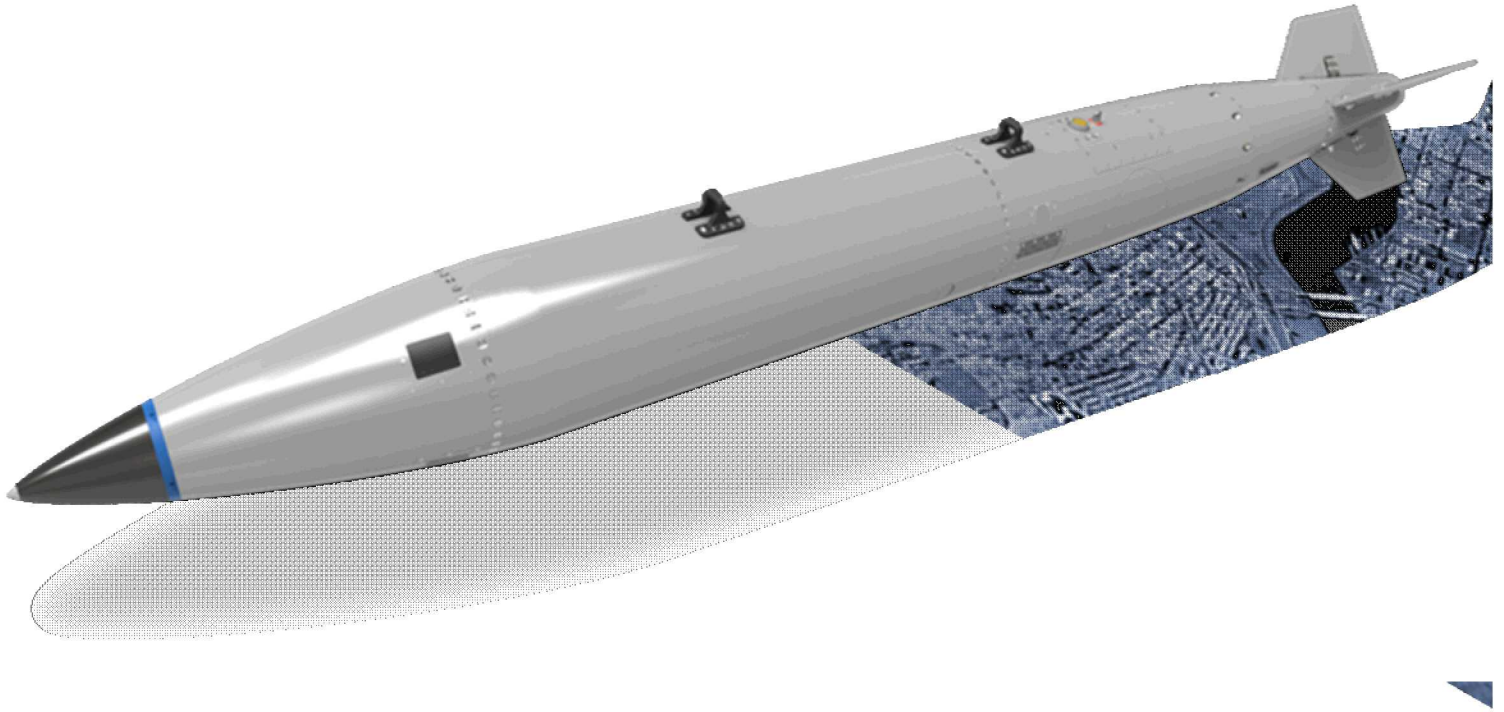
Douglas J. Bruder
Associate Labs Director, Global Security
Sandia National Laboratories

Sandia National Laboratories is a multimission laboratory managed and operated by National Technology & 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.

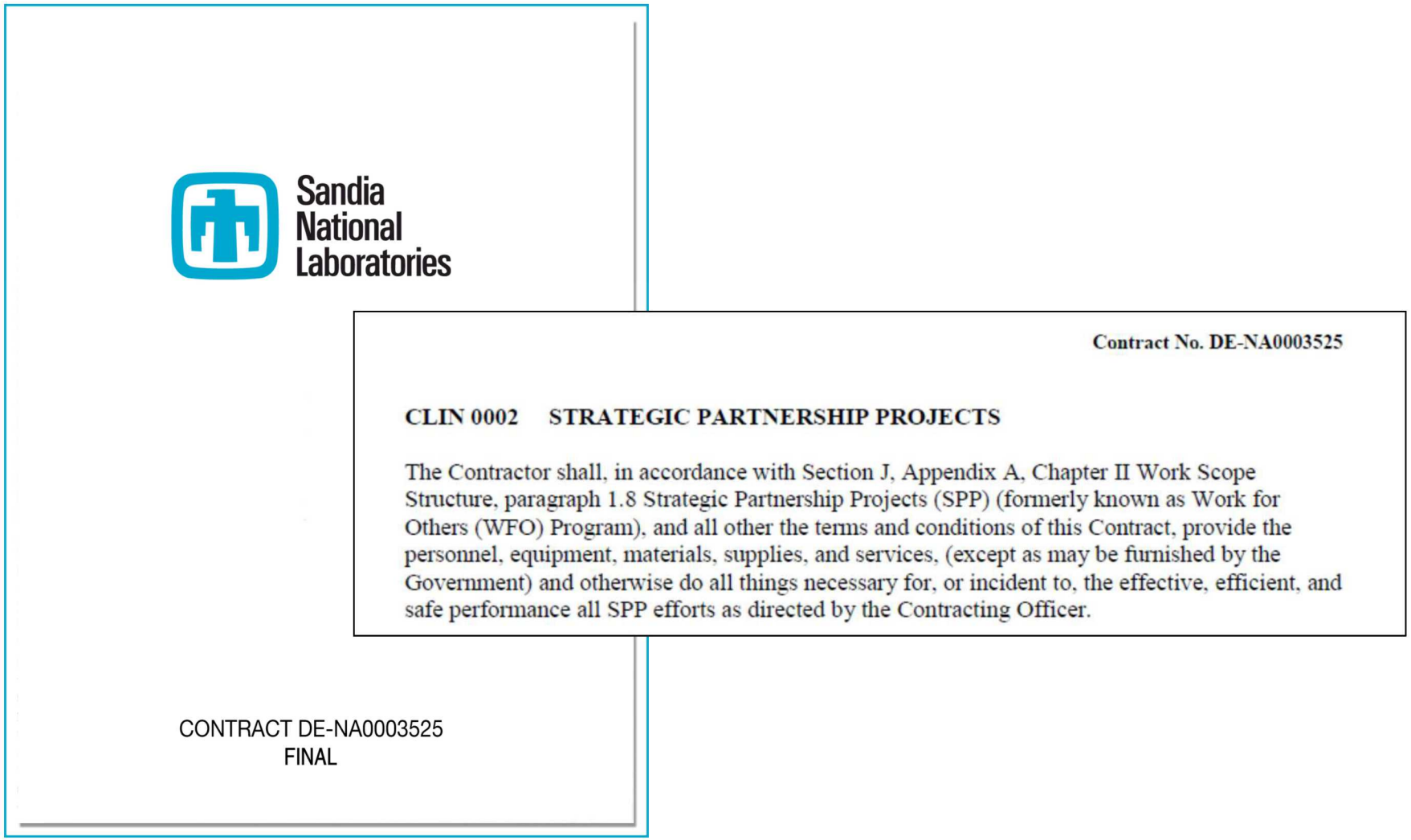
Sandia National Laboratories is a multimission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-NA0003525.

Sandia's SPP Portfolio is synergistic with the ND Program

- Criteria for selection of SPP work:
  - Federally Funded Research and Develc
    (FFRDC) principles



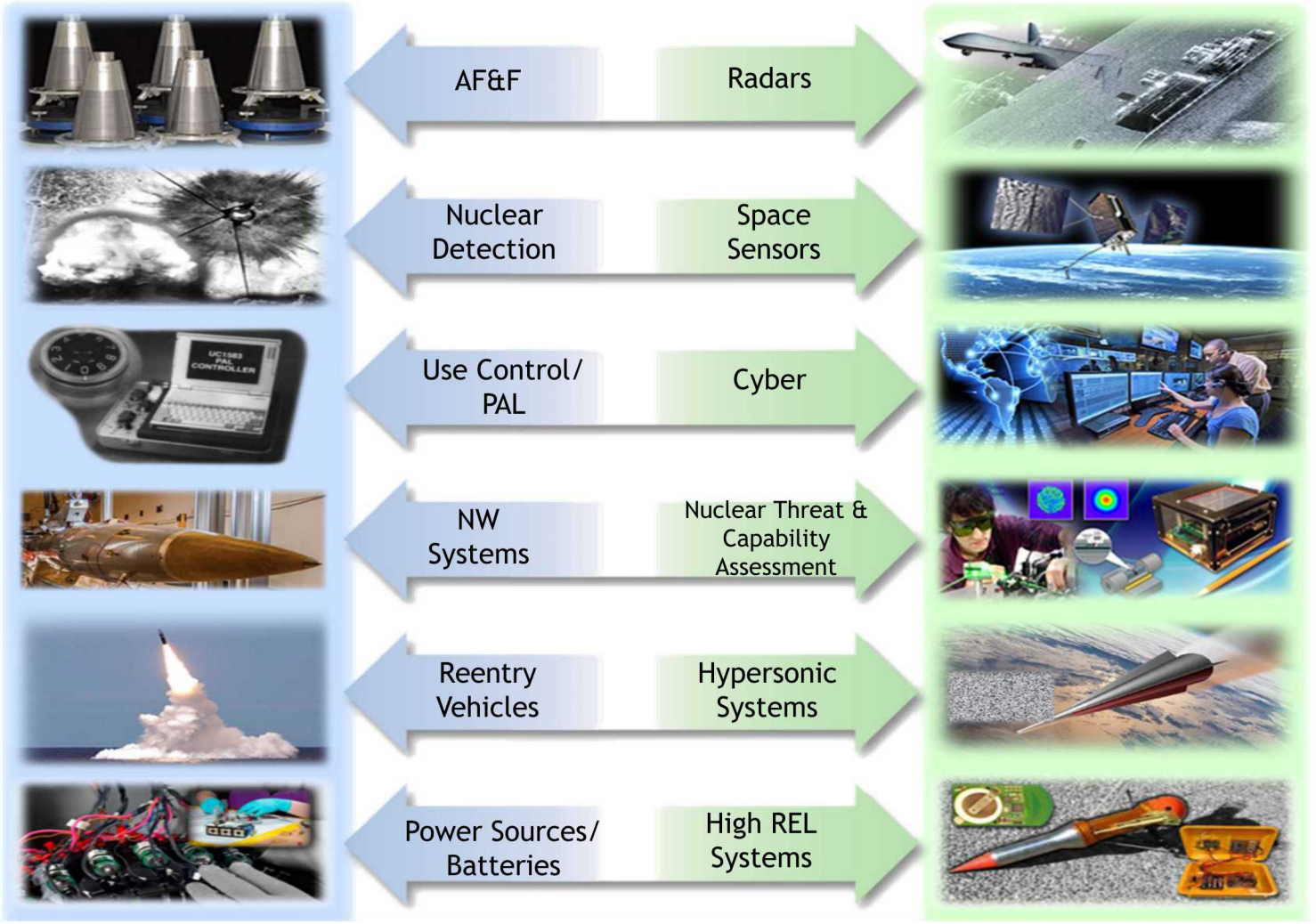
M&O Contract DE-NA0003525



SPP provides benefit to ND in several ways

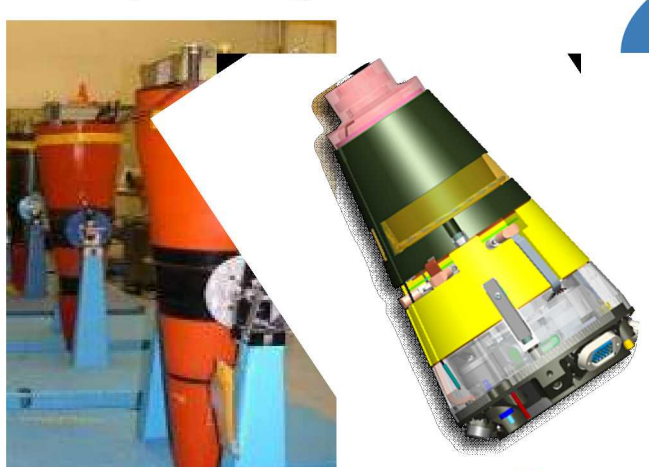
- Development, Sustainment, and Cost Sharing of essential NW Capabilities
- Talent Pool – Broad portfolio provides mechanism for dealing with fluctuations in NW funding and work scope
- Flywheel for quick, cost effective response to changing staffing and space needs
- Cost Effective Infrastructure – Shared operation and maintenance (O&M) costs and direct SPP investments in facilities and equipment
- Development, Sustainment, and Cost Sharing of essential NW Capabilities

ND/SPP synergies provide direct benefit to NW



NW fuzing and SPP-funded Synthetic Aperture Radar efforts are highly leveraged

NW radar fuze technology base



Advanced radar fuzing technology

Radar technology base originated with NW

Strengthened through WFO SAR development

Applied advanced technology for NW systems

Synthetic Aperture Radar (SAR)

SPP programs helps to sustain radar skills and develops new capabilities incorporated into LEPs and Alts.

Satellite Programs demonstrate the synergy between SPP and nuclear weapons

Servers

Complex system design and rigorous Systems Engineering

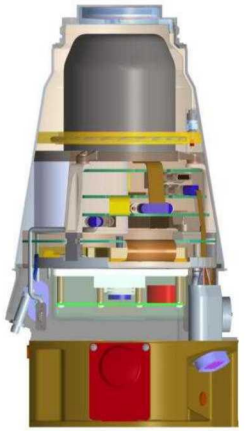
System simulation and test over broad range of operational and survival conditions

Rigorous requirements development, tracking and verification for mission assurance Dynamic Object Oriented Requirements System (DOORS)

Rigorous configuration management for mission assurance

Resourced loaded schedule and project controls Earned Value Management System(EVMS)

B61-12 LEP

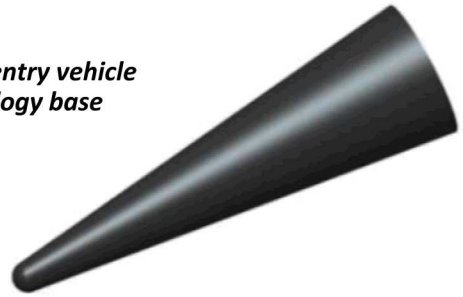


W88 ALT

Sandia's satellite programs leverage the core capabilities for NW and make a significant impact on enhancing NW-critical capabilities and resource sharing

SPP Conventional Prompt/Strike Capabilities enhance NW Technology Development

NW reentry vehicle technology base



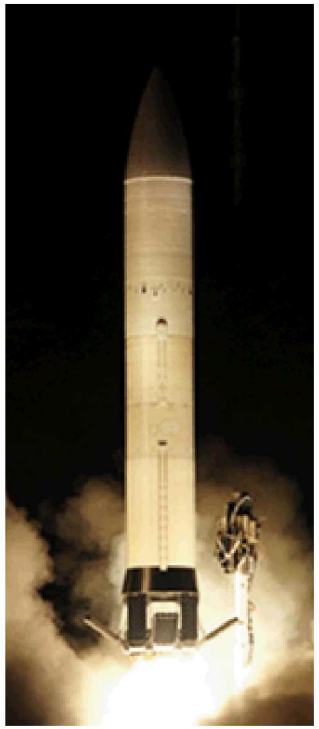
Reentry Vehicle & hypersonic flight technology base originated with NW

Strengthened through SPP Conventional Prompt Strike and Targets and Countermeasures development

Facilitates HOT Shot

Kauai Test Facility (KTF)

High Operational Tempo (HOT) Shot

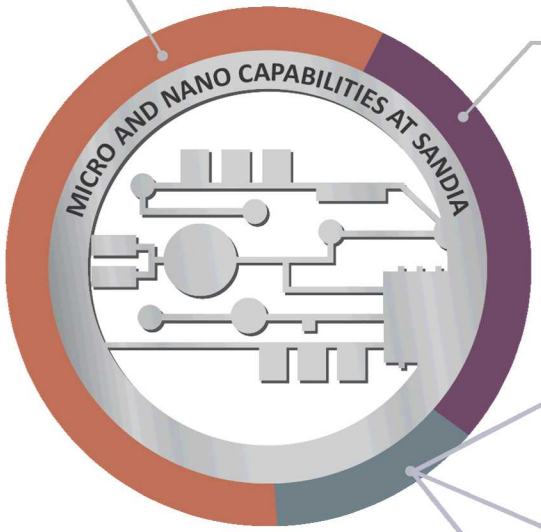


Hypersonic Flight

Sandia's micro and nano capability enables our SPP Programs and is essential for NW

MESA

MICROSYSTEMS ENGINEERING, SCIENCE AND APPLICATIONS



CDC

COUNTERFEIT DETECTION CENTER

CINT

CENTER FOR INTEGRATED NANOTECHNOLOGIES

IBL

ION BEAM LABORATORY

RAD TEST FACILITIES

- ANNULAR CORE RESEARCH REACTOR (ACRR)
- SATURN ACCELERATOR
- HERMES III ACCELERATOR
- Z ACCELERATOR FACILITY

- Largest government-owned trusted fabrication facility
- *Only* source for custom DOE strategic rad hard (SRH) microelectronics
- Federally Funded Research & Development Center (FFRDC) with the broadest and deepest micro and nano expertise

Summary

SPP at Sandia develops, enhances, & sustains NW capabilities

- Systems Engineering & Sciences
- Radar
- Microelectronics
- Use Control/Cyber Security
- Material Sciences

NW benefits from SPP investments and contributions to indirect operating costs

SPP stabilizes the work force and buffers funding swings

- NW funding swings offset by SPP expansion/contraction
- Agility of internal transfers and matrixing mitigates long wait times for Q clearance