Developing Manufacturing and Engineering Partnerships

Hosted by: Sandia National Laboratories in Partnership
The University of Texas at El Paso
AGENDA

8:30 AM  Introductions – Laura Lovato
8:40 AM  Welcome – Dr. Heather Wilson, UTEP
8:55 AM  About Sandia National Laboratories – Dr. James Peery
9:10 AM  Build Back Better Award – Dr. Ahsan Choudhuri
9:25 AM  Sandia’s Supply Chain – Louis Griego
9:40 AM  Sandia’s National Security Requirements – Dennis Helmich
9:55 AM  Sandia’s PPVS Requirements – Alfonso Lopez-Gaston
10:10 AM  Break
10:25 AM  Sandia’s Hi-Rel Custom Tech Requirements – Tri Trinh
10:40 AM  Sandia’s Fabrication Requirements – Jeremy Cottle
10:55 AM  Sandia’s Supply Chain Risk – Amber Romero
11:10 AM  Working with Sandia – Laura Lovato
11:25 AM  Introduction to WIPP – Ryan Williamson
11:40 AM  Introduction to Borderplex Alliance – Denise Avila
11:55 AM  Closing Remarks – Laura Lovato
12:00 PM  Networking
Dr. Heather Wilson
President of The University Texas at El Paso
Dr. James Peery
Labs Director for Sandia National Laboratories
SANDIA’S HISTORY IS TRACED TO THE MANHATTAN PROJECT

• 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

Dear Mr. Wilson:

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

This operation, which is a vital aspect of the atomic weapons program, is of extreme importance and urgency to 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 now an opportunity to render an exceptional service to the national interest.

I am writing a similar note direct to Mr. G. B. Dudley.

Very sincerely yours,

[Signature]

Mr. Larry A. Wilson, President,
American Telephone and Telegraph,
Long Brothers,
New York 7, N. Y.
SANDIA IS A FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTER (FFRDC) MANAGED AND OPERATED BY

National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc.

Government-owned, contractor-operated

FFRDCs are long-term strategic partners to the federal government, operating in the public interest with objectivity and independence and maintaining core competencies in missions of national significance.
NATIONAL SECURITY IS OUR BUSINESS
For more than 70 years, Sandia has delivered essential science and technology to address the nation’s most challenging security issues

VISION
To be a leader in keeping the world safe and secure

MISSION
We use innovative science and engineering to anticipate and solve the most challenging national security problems

PURPOSE
Render exceptional service in the national interest
WE PLAY A CRITICAL ROLE IN THE NATIONAL CONVERSATION THAT LOOKS AT THE FUTURE OF GLOBAL SECURITY

The geopolitical environment is rapidly changing and the U.S. must prepare for technology surprise with speed, agility, and innovation

OBJECTIVE

IN 10 YEARS, WE WILL HAVE UNLEASHED HIGH-VELOCITY ENGINEERING TO COUNTER GLOBAL THREATS BY:

• Anticipating future threats
• Applying revolutionary science and engineering
• Dramatically reducing delivery timelines
• Inspiring and including contributions from all
• Leading the enterprise
• Serving as an FFRDC with objectivity and independence in the public interest
• Taking appropriate risks

Resulting in:

SUSTAINED U.S. TECHNICAL ADVANTAGE

AN UNSTOPPABLE TEAM

BREAKTHROUGH INNOVATIONS

TIMELINES CUT IN HALF

CONTINUED EXCEPTIONAL SERVICE IN THE NATIONAL INTEREST
SANDIA HAS FIVE MAJOR PROGRAM PORTFOLIOS

- Advanced Science & Technology
- Nuclear Deterrence
- Energy & Homeland Security
- Global Security
- National Security Programs
NUCLEAR DETERRENCE
Responsibilities form a critical mandate

Design agency for nonnuclear components
- Gas transfer systems
- Radar
- Safety systems
- Arming, fuzing, and firing systems
- Neutron generators

Sandia’s Mission Assurance organization proactively prevents defects and ensures mission success

Multidisciplinary capabilities
Required for design, qualification, production, surveillance, computation/experimentation
- Major environmental test facilities & diagnostics
- Materials sciences
- Light-initiated high explosives
- Computational analytics

Production agency
- Neutron generators
- Sandia external production
- Microelectronics
- Thermal batteries
NUCLEAR DETERRENCE

Seven major programs are carried out:

- W88 Alteration (ALT) 370
- W80-4 Life Extension Program (LEP)
- Mobile Guardian Transporter
- W87-1 Modification Program
- B61-12 Life Extension Program
- W93 Program
- Mk21 Arming & Fuzing Assembly
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
Provide trusted, threat-informed pathfinder technology for national security

NATIONAL SECURITY PROGRAMS

- Information Operations
- Proliferation Assessments
- Science & Technology Products
- Surveillance & Reconnaissance

Integrated Military Systems
ENERGY & HOMELAND SECURITY

Secures the nation’s critical infrastructures and environment against attacks, threats, and climate change by performing world-class research and development

• Enable the full potential of renewable energy and subsurface resources
• Ensure the safety, security, and resilience of nuclear power and the electric grid, and the safe management and disposal of radioactive wastes
• Advance efficient and sustainable energy use for a changing world
• Reduce the nation’s vulnerability to chemical, biological, radiological, and nuclear threats
• Increase our nation’s digital and physical critical infrastructure security and resilience to natural and human-made threats
ADVANCED SCIENCE & TECHNOLOGY
Integrates multidisciplinary efforts to advance the science of the possible for Sandia’s missions

OFFICE OF SCIENCE (SC) PROGRAM

• Advanced and unique scientific and engineering capabilities support SC’s priorities for DOE’s missions

• SC-funded Sandians perform innovative, world-class research that cannot be pursued elsewhere and achieve national and international impact while countering science and technology surprise

• Provides an important talent pipeline, helping to attract and retain the best and brightest fundamental science researchers who contribute broadly across Sandia’s missions over their careers
Research Foundations play an integral role in mission delivery
SANDIA’S WORKFORCE IS GROWING
Staff has grown by more than 5,000 since 2011 to meet all mission needs

14,920
EMPLOYEES

13,078
New Mexico

1,842
California
OUR BUDGET COVERS A BROAD RANGE OF GOVERNMENT AND OTHER WORK

**FY21 BUDGET**

**$4.46B**

**NNSA Weapons**

**Nonproliferation**

**DOD Nuclear Deterrence**

**Other DOE**

**Other DOD**

**Other**

**OTHER**
- Department of Homeland Security
- Other federal agencies | Nonfederal entities
- CRADAs, licenses, royalties | Inter-entity work

**DOD**
- Air Force | Army | Navy
- Defense Threat Reduction Agency
- Ballistic Missile Defense Organization
- Office of the Secretary of Defense
- Defense Advanced Research Projects Agency
- Intelligence Community

**OTHER DOE**
- Science
- Energy Efficiency and Renewable Energy
- Nuclear Energy
- Environmental Management
- Electricity Delivery and Energy Reliability
- Other DOE

**NONPROLIFERATION**
- NNSA/NA20 | State Department
Dr. Ahsan Choudhuri

University of Texas at El Paso
Associate Vice President
Aerospace Center (cSETR)

Professor of Aerospace and Mechanical Engineering
Louis Griego
Sandia National Laboratories
Director of Integrated Supply Chain
INTEGRATED SUPPLY CHAIN OPERATIONS

**Procurement**

- Acquisition planning, strategic purchasing
- Just-in-Time purchases
- P-Card purchases
- Subcontracts

Approved Purchasing System ($20M) for 3 years

**Logistics**

- Property Management
- Receive/Deliver packages
- Corporate Storage
- Shipping/Mail Services
- Hazardous/Non-Hazardous Moves

Approved Property Management System

**Policies, Assurance & Outreach**

- Active suppliers monitored for debarments or sanctions
- Detailed risk assessments performed for critical purchases
- Small Business Forums
- Improved small business spend
- Authors and issues quarterly Congressional Newsletters
- Publishes Annual Economic Impact Brochure
INTEGRATING KEY PROCESSES AND FUNCTIONS ACROSS THE ENTIRE VALUE STREAM TO ACHIEVE MISSION REQUIREMENTS

1. **PLANNING**
   - Acquisition Planning
   - FMCSR Program
   - SC Risk Assessments
   - SCRM Program
   - Suspect/Counterfeit Program

2. **SOURCING**
   - Supplier Diversity
   - Excess Supply
   - FMCSR Program
   - HMPT Program
   - Just-in-Time Procurements
   - Manufacturing Liaison
   - P-Card Program
   - Protégé Program
   - Reapplication
   - Small Business Mentor
   - Subcontract Award
   - Subcontract Solicitation

3. **RECEIVING/DELIVERING**
   - Freight Contracts
   - Hazardous Transportation
   - Mail Services
   - Non-Hazardous Transportation
   - Quality-Level Program
   - Receiving Network
   - Subcontract Management
   - Supplier Performance Evaluation
   - Transportation
   - United Kingdom Logistics

4. **STORING, MOVING**
   - Bus Service
   - Corporate Storage
   - FMCSR Program
   - Hazardous Transportation
   - Non-Hazardous Transportation
   - P&T Program
   - Property Management
   - United Kingdom Logistics

5. **DISPOSING**
   - Classified Destruction
   - Govt.-Furnished Property
   - High Risk Destruction
   - Reapplication
   - Shipping
   - Special Packaging
   - Sub-Contract Closeout

**Outputs for the Customer**
- Customer Satisfaction
- Improved Cycle Time
- Lower Costs
- Reliable Sources
- Reduction in Lead Times
- Efficiency Gains
- Reduced Shrinkage
- Approved Contractor Purchasing System
- Approved Property Management System
SUPPLY CHAIN THREATS AND DISRUPTIONS

- **Continued Impact of COVID-19**
  Supply shortages, unpredictable forecasting, logistic roadblocks, etc.

- **Repercussions from Geo-Political events**
  Russia/Ukraine Conflict, sanctions, threats from adversaries

- **Inflation and rapidly changing materials costs**
  Pricing changes for raw materials driven by variation in demand
### Electronic Materials
- Resistors
- Integrated Circuits
- Cables and Connectors
- Wires
- Coax Coating
- Semiconductor Chips
- Printed Circuit Boards (PCB)
- Printed Wiring Assemblies (PWA)
- Fiber optic Cable
- Rare-metal components
- Hardware
- FPGA – Field Programmable Gate Array chips
- COTS electronics
- IT Networking equipment

### Chemicals
- Neon Gas
- Caustic Soda
- Isocyanate
- Phosphates
- Dessicants - silica gel
- Acrylonitrile
- Butadiene
- Styrene (ABS)
- Polymer adhesives (particularly 3M products)
- Blasting media - abrasive powder
- Ethylene Glycol
- 1-Methyl-2-pyrrolidinone (NMP)
- Anti-foam fluid
- Silicon
- Magnesium

### Labor per Industry
- Manufacturing (non-durable goods)
- Transportation
- Warehouses
- Manufacturing (durable goods)
- Wholesale Trade
- Construction
- Information Technology

### Construction Materials
- Concrete
- Forklifts
- Fleet vehicles
- HEPA filters
- Roofing / ceilings
- Flooring
- Lumber
- Gypsum
- Pipes
- Insulation
- Polyvinyl Chloride (PVC)
- HVAC
- Boilers
- Paint
- Gypsum wallboard
- Air Handling Units
- Electrical equipment
- Doors

### Metals
- Copper
- Kovar
- Rare Earth Metals (Erbium, Scandium)
- Molybdenum metal sheets and powder
- Aluminum
- Steel
- Tin products
- Iron
- Palladium
- Copper foil
- Nickel
- Titanium
- Lithium
- Cobalt
- Pig iron

### Packaging / Shipping
- Corrugated Packaging
- Crude Oil / Diesel Fuel
- Plastic Containers
- Pallets
- Polyethylene (PE)
- Polypropylene (PP)
- Monoethylene (MEG)
- Polystyrene foam
- Trailers for transportation

### Miscellaneous
- Batteries
- Vacuum chambers
- Rubber-Based Products
- Resin-Based Products
- Plastics / Plastic Resins
- Rubber
- Glass
- Adhesives
- Medical lab equipment
- Pipettes
- Dry ice
- Carbon black
- Epoxy curing agents
## CURRENT SUPPLY CHAIN DISRUPTIONS

<table>
<thead>
<tr>
<th>Disruption</th>
<th>Customer</th>
<th>Cause of the Disruption</th>
<th>Impact</th>
</tr>
</thead>
</table>
| **Shortage of IT Professionals & IT Networking Equipment** | • NM & CA data centers  
• High Performance Computing | • Classified computing does not allow for a remote option (which seems to be more important to staff than higher pay). However, pay rates are still too low. | • The latest GII/DOL has been increased ~4.5% and more suppliers are requesting it. Some suppliers who have historically not requested rate increases are seeking equitable adjustments of 10-15% on their rates.  
• Deliverable schedules are often taking twice as long to complete due to personnel shortages. |
| **Customized Printed Circuit Boards and Printed Wiring Assemblies** | • Mobile Guardian Transport | • Raw material shortages (Copper foil and Pre Prag)  
• Backlog, companies haven’t fully caught up. Some relief has occurred, but it is not fully recovered. | • Individual purchase orders have been delayed but the overall schedule has not been impacted yet |
| **Chemical shortages** | • W80-4  
• PPVS | • Companies have not caught up from pandemic supply issues.  
• Chemicals with a limited life and long lead times (6+ months) are expiring too soon for use. | • Final schedules have not yet been impacted; however smaller deliverable schedules are getting tighter |
| **HVAC units, High Voltage Switching Gears, Steel, Roofing Materials, Labor, Air Handling Units, Vacuum Chambers** | • Large A&E construction projects | • Raw material and semi-conductor computer chip shortages  
• Rising diesel fuel costs | • Anticipating project delays of at least 6-8 months  
• Prices are increasing ~50% |
SCRM PRIORITY INITIATIVES

Subcontractor Risk Assessment

- Full risk analysis on suppliers that looks into their Cybersecurity Indicators, Financial Health, Risk Events/Indicators, Sandia Past Performance, Counterfeit Indicators, Foreign Corporate Linkages, Non-US Labor, Lower Tier Supply Chain.

Suspect Counterfeit

- Identification and investigation into potential Suspect/Counterfeit items within the laboratory to minimize safety and security issues.

Score

- Internal performance feedback metrics are gathered to address subcontractor issues

QL inspection

- Every quality significant item received requires an inspection be completed to identify any potential safety, security or suspect/counterfeit concerns.
Dennis Helmich
Sandia National Laboratories
Director of Integrated Military Systems Development
OVERVIEW

Director of Integrated Military Systems

Dennis R. Helmich
Background
National Security Programs

INFORMATION OPERATIONS

INTEGRATED MILITARY SYSTEMS

PROLIFERATION ASSESSMENTS

SCIENCE & TECHNOLOGY PRODUCTS

SURVEILLANCE & RECONNAISSANCE
Integrated Military Systems

Develops, demonstrates, and supports the fielding of game changing integrated systems and technologies to solve our warfighters’ most challenging, urgent, and high-risk problems.

SUBPROGRAMS

▪ Missile, Air, and Space Defense
▪ Next Generation System Analytics
▪ Pathfinder Technologies
▪ Strike Systems and Aerospace Technologies
Integrated Military Systems

- Center consists of 400 staff with multi-disciplinary backgrounds.
- Majority of work performed is schedule driven so supply chain and procurements are a critical issue for the Center.

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Engineering</td>
<td>63%</td>
</tr>
<tr>
<td>Mechanical</td>
<td>38%</td>
</tr>
<tr>
<td>Electrical</td>
<td>27%</td>
</tr>
<tr>
<td>Aero/Astro</td>
<td>17%</td>
</tr>
<tr>
<td>Computer</td>
<td>5%</td>
</tr>
<tr>
<td>Other STEM</td>
<td>12%</td>
</tr>
<tr>
<td>Other</td>
<td>25%</td>
</tr>
</tbody>
</table>

SPONSORS

- Missile Defense Agency 37%
- Navy 25%
- Army 17%
- Air Force 11%
- OSD 4%
- Other 6%
Products We Procure across NSP

• Printed wiring boards and assemblies
• Machined metal housing and structural components
• Cable assemblies
• Electronic sub-assemblies and housings
• Energetic components
• Electromechanical actuators
• Automated test equipment
• RF sub components and assemblies
• Microelectronics fabrication tools

Nearly all procurements for IMS are at the OUO/CUI/ITAR level or higher
Future Needs
High Op Tempo (HOT) for Hypersonics (H4H)

Cooperatively funded, planned and executed annual flight test campaign utilizing precision sounding rockets for rapid maturation of enabling offensive and defensive hypersonic technologies.

Precision sounding rockets achieve hypersonic environments at a fraction of the cost and complexity of typical “all-up” flight tests.

- Boost-phase conditions are different (e.g. spinning), but reach equivalent velocities and environments.
- Simplified rail-launched vehicles without flight termination systems reducing complexity and costs.
- Multi-shot campaigns provide economies of scale that enable further cost effectiveness while maximizing workforce development.

The H4H Program speeds up technology and workforce development with increased testing opportunities, accelerates innovation, research, and prototyping and will result in rapidly improving the U.S. hypersonic capabilities in-parallel to full system flight tests.
Increasing Hypersonic Testing Through MACH-TB

$15M targeted cost per full-scale test

$7M sub-scale testing per launch vehicle

Objective
support hypersonic programs by creating opportunities to test technologies with robust, agile and modular approaches.

Test Bed Approach
• Incremental approach to rapid testing
  • Increasing trajectory complexity
• Use of additive manufacturing for Thermal Protection System and Sub-Structures (ORNL)
• Rocket Lab Electron Launch Vehicle (30 launches to date)

$100K - $1M per test/ride-along

20+ partners from industry, national labs, & academia
CAMINO: Center for Advanced Manufacturing Innovation

Current State
- Need for increased speed and agility
- Serial processes
- Siloed, scattered capabilities
- Administrative delays and cultural hurdles

Goals
- Rapid prototyping capabilities to the component level
- Home for Sandia’s Advanced Materials and Manufacturing capabilities
- DA/PA enclave relationships
- Rapid design/build/test iterations using HPC, SOTA equipment
- Integrated and co-located R&D with government, industry, and academia

Proposed “CAMINO” Off-Site Facility
A NATIONAL RESOURCE FOR SPECIALIZED AM CAPABILITIES

Co-locates Industry, Government, & Academia
- Accelerates and supports tech transfer: Spin-In and Spin-Out
- Low barriers to R&D partnerships with industry and academia
- Accelerated workflows, rapid prototyping, & solutions to “tech mat” roadblocks

Designs for manufactur-ibility
Couples TRL & MRL advances - ensuring high TRL isn’t reached without the ability to manufacture at scale.

Creates New Solutions to Old Problems
- Cables, next-generation interconnects, & backshells
- Polymers, Metal, Composites Advanced Manufacturing
- AM qualification and insertion
PURCHASE PRODUCT VALUE STREAM

- The Purchased Product Value Stream is responsible for product engineering and materials planning for production missions at Sandia National Laboratories.

- We provide technical leadership in the various engineering disciplines (mechanical, chemical, materials science, and electrical) to identify, develop, deliver, assure, and sustain a commercial supply base for weapon components, materials, subassemblies, and custom tooling.

- We anticipate and manage risk within the supply chain, researching alternate materials, defining and developing test and evaluation methodologies, developing design of experiments, identifying and developing supplier capabilities, and leading qualification activities.

- We provide materials planning expertise using industry-standard materials-planning processes and tools to initiate the procurement phase and monitoring the supply chain to meet product-realization schedules.
PPVS OVERVIEW

PPVS is responsible for interactions with the commercial supply base for input materials that will go into high rigor/high consequences design, development and production activities at SNL.

*Materials include raw materials, piece parts, components, sub-assemblies and tooling.*

*Goal:* Quality Parts & Services Delivered On-Time, for the Lowest Cost, with Maximum Agility.
91 Engineering Commodity Sets

**Piece Parts**
- Metal, Foam, Molded & Plastic Components
- Ceramics, Cermets, Composites
- Raw Materials, Braze Materials, Chemicals
- Electrical Components, Cables, Connectors
- COTS: Electrical, Nuts & Bolts, Tapes, Adhesives

**Tooling, Gages, Fixtures, Molds**
- Plastic, Metal, Multi-material
- 3D printed or supplier produced

**Inspection Services**
- Mechanical, Electrical, Chemical
- Non-Destructive
WHAT TO EXPECT WHEN WORKING WITH PPVS

- What can prospective suppliers expect when working with the Purchased Product Value Stream at Sandia National Laboratories?

- Potential discussions with Sandia Purchased Product Engineer (PPE)
  - What tolerances can the supplier meet?
  - What capabilities does the supplier have?
  - What capacity does the supplier have?
  - What kind of customer base does the supplier generally support?
  - Does the supplier carry any external accreditation (AS9100, ISO9001, etc.)?
  - Willingness to do work with Sandia
  - Willingness to go through quality assessment

- Development purchase order to determine if supplier meets part requirements

- Site visit by Purchased Product Engineer
  - Facility tour
  - Discuss future work
  - Technical discussions
POTENTIAL SUPPLIER QUALIFICATIONS NEEDED

• Supplier’s Quality Management System (SQMS) may need to be approved prior to a procurement contract being placed
  • Product Quality Requirements (PQR) Assessment:
    • Audit at Supplier’s location
    • Graded approach: PQR1010, 1020, 1040, 1050 & 1060
    • Re-approval required every 3 years

• Technical Capability Assessment

• Designated Calibration Source (DCS) approval is required if supplier data is to be used for acceptance. Re-approval is every 2 years.

• Atomic Energy Act (AEA) certified if the parts are Export Controlled
Break

This presentation will resume in 15 minutes
Tri Trinh
Sandia National Laboratories
Manager of Hi-Rel Custom Technologies
1. High Reliability Custom Technologies
2. Supplier Requirements
3. Needed Products and Services
4. Unneeded Products and Services
We support the nation’s Nuclear Deterrence mission by providing design expertise and hardware.

<table>
<thead>
<tr>
<th>Role</th>
<th>Design Agency (DA)</th>
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<tbody>
<tr>
<td>Responsibilities</td>
<td>DA responsibilities throughout product realization process e.g. conceptual design, development, qualification, production, sustainment</td>
</tr>
<tr>
<td>Department Size</td>
<td>17 (includes 1 Manager)</td>
</tr>
<tr>
<td>Experience (yrs)</td>
<td>0-20</td>
</tr>
<tr>
<td>Funding ($M)</td>
<td>12-16</td>
</tr>
<tr>
<td>Current Activities</td>
<td>• Steady state production</td>
</tr>
<tr>
<td></td>
<td>• Development</td>
</tr>
<tr>
<td></td>
<td>• Early technology maturation</td>
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HIGH RELIABILITY CUSTOM TECHNOLOGIES

**Capacitors**

Mica (left), Polymer Multilayer (PML, right)

**Mylar (center), Polymer Multilayer (PML, left and right)**

**Magnetics**

a. Current Viewing Transformers
b. Flyback
c. Inductors
d. Isolation Transformers
e. Pulse Transformers
f. Push-pull
g. Solenoid Coils
h. Stator Windings (not pictured)
SUPPLIER REQUIREMENTS

- Experience working with production for high consequence applications e.g. aerospace, automotive, medical, military, etc.
- International Traffic in Arms Regulations (ITAR) certified
- US citizens
- Access controlled areas for storage of parts and/or acceptance testers
- Environment controlled processing and storage areas
NEEDED PRODUCTS AND SERVICES

• Injection molding with liquid crystal polymer for small quantities
• Populating boards
• Winding large quantities of capacitor and magnetics prototypes
• Capacitor and magnetics production
• Testing engineering support e.g. hardware, LabVIEW

UNNEEDED PRODUCTS AND SERVICES

• Capacitor and magnetics engineering design
Amber Romero
Sandia National Laboratories
Supply Chain Analyst

Jeremy Cottle
Sandia National Laboratories
Team Lead of Manufacturing Liaison
MEET SANDIA NATIONAL LABORATORIES,
YOUR HIGH MAINTENANCE CUSTOMER
in the NATIONAL INTEREST

Amber Romero, Supply Chain Analyst
Jeremy Cottle, Manufacturing Liaison Team Lead
Integrated Supply Chain Management
TECHNICAL CAPABILITIES

TIGHT TOLERANCES

FLATNESS
DIAMETER
THICKNESS

\[ \pm 0.001'' \]
or greater
TECHNICAL CAPABILITIES

MATERIALS

- Aerospace Grade Metals
- Exotic Metals
- Heat Treated Metals
- Stainless Steel + Alloys
INSPECTION

Large and Small Envelope

Material Verification (ASTM)

Vision System/CMM

Profiles/True Positions/Datum shifts

Fixtures/Restraints & Thread Gaging

Inspection
ACCESS TO SUPPORT/ SUB-SUPPLIER CAPABILITIES

- Heat Treatment/Annealing
- Conversion/Chromate Coat
- Powder Coating
32 Micro Inch Finish

Burrs < .001” w/out tumbling

Threaded Inserts

Vessels & Holding Tanks

Radii < .005"

Lubricants w/out sulfur

0.050mm Min Edge Break

Waterjet

EDM & Laser

Lubricants w/out sulfur

0.050mm Min Edge Break

Waterjet

EDM & Laser

Lubricants w/out sulfur

0.050mm Min Edge Break

Waterjet

EDM & Laser

Lubricants w/out sulfur

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EDM & Laser

Lubricants w/out sulfur

0.050mm Min Edge Break

Waterjet

EDM & Laser

Lubricants w/out sulfur

0.050mm Min Edge Break

Waterjet

EDM & Laser
WHAT ARE WE NOT LOOKING FOR???
LOW RISK SUPPLIERS

- No foreign influences; Domestic raw materials
- History of on-time delivery and hitting tolerances
- Cybersecurity and Physical Security
- Quality Management System
- Communicative & Adaptive
ELEMENTS OF A ROBUST QUALITY MANAGEMENT SYSTEM
ELEMENETS OF A ROBUST QUALITY MANAGEMENT SYSTEM

- Technical
  - Control of M&TE
  - Inspections
  - Control of Items/Processes
  - NCs & CAs
  - Export Control

- General
  - Contract Review
  - Quality Improvement
  - Training & Documentation
  - Procurement
  - Records
Sandia has exceeded its small business goals for the 6th year in a row!

<table>
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<th></th>
<th>Goal</th>
<th>% Achieved</th>
<th>$ Achieved</th>
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<tbody>
<tr>
<td>Small Business</td>
<td>60%</td>
<td>66.38%</td>
<td>$1.1B</td>
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<tr>
<td>Small Disadvantaged Business</td>
<td>15%</td>
<td>19.30%</td>
<td>$321M</td>
</tr>
<tr>
<td>Woman-Owned Small Business</td>
<td>10.5%</td>
<td>12.74%</td>
<td>$212M</td>
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<tr>
<td>HUBZone</td>
<td>4%</td>
<td>5.18%</td>
<td>$86M</td>
</tr>
<tr>
<td>Veteran-Owned Small Business</td>
<td>7%</td>
<td>11.66%</td>
<td>$194M</td>
</tr>
<tr>
<td>Service-Disabled Veteran-Owned SB</td>
<td>5.5%</td>
<td>8.17%</td>
<td>$136M</td>
</tr>
</tbody>
</table>
SANDIA’S TOP SUBCONTRACTING INDUSTRIES

<table>
<thead>
<tr>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Related Services</td>
</tr>
<tr>
<td>Research and Development in the Physical Engineering and Life Sciences</td>
</tr>
<tr>
<td>Commercial and Institutional Building Construction</td>
</tr>
<tr>
<td>Engineering Services</td>
</tr>
<tr>
<td>Electronic Computer Manufacturing</td>
</tr>
<tr>
<td>Small Business Categories</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Small Business</td>
</tr>
<tr>
<td>Small Disadvantaged Business</td>
</tr>
<tr>
<td>Woman-Owned Small Business</td>
</tr>
<tr>
<td>HUBZone Small Business</td>
</tr>
<tr>
<td>Veteran-Owned Small Business</td>
</tr>
<tr>
<td>Service-Disabled Veteran-Owned Small Business</td>
</tr>
</tbody>
</table>
REGISTER IN iSUPPLIER

Supplier Registration

Step 1: Access iSupplier Portal Registration Page

iSupplier Registration page: Register here

To register in Sandia’s iSupplier Portal go to the Registration Page and fill out both of the required pages before clicking the register button.

IMPORTANT: Upon completion of the iSupplier registration you will receive an email containing a username and a temporary password. You will need to change your password within 3 days upon receipt of the email.

Step 2: Enter Company Name & Contact Information

To begin your company’s registration, you must enter the required information:

- Legal Company Name
- Tax Country
- Non-US Tax Registration Number
- Federal Tax ID Number
- DUNS Number
- Additional Contact Information

CONTACTS

For questions regarding iSupplier Registration email: supreg@sandia.gov

For questions regarding existing iSupplier account concerns email: isupplier@sandia.gov

For assistance from our Supplier Diversity & Small Business Team email: supplier@sandia.gov

Questions for Electronic Invoicing email: einvoice@sandia.gov

Questions regarding Payments or General Accounts payable email: aphelp@sandia.gov
Sandia Business Opportunities Website (BOW)

Information about Subscribing and Responding to BOW Postings

You must register as a Sandia supplier to respond to an opportunity or to subscribe to BOW postings. Use the “Register” link to register, which can take a few days. Once registered, use the “Login” link to log in.

Register | Login

BOW List

Click the Id link in the first column to view details.

<table>
<thead>
<tr>
<th>Id</th>
<th>NAICS</th>
<th>Posting Type</th>
<th>Posting Title</th>
<th>Posted</th>
<th>Posting Close</th>
<th>Competition Type</th>
</tr>
</thead>
</table>
OUTREACH EVENTS

Attend our Small Business Forums

<table>
<thead>
<tr>
<th>Date</th>
<th>Focus</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>November 29, 2022</td>
<td>Developing Manufacturing &amp; Engineering Partnerships</td>
<td>El Paso, TX</td>
</tr>
<tr>
<td>May 17, 2023</td>
<td>Service-Disabled Veteran-Owned Small Business</td>
<td>Livermore, CA</td>
</tr>
<tr>
<td>August 29, 2023</td>
<td>Partnership with DOE OSDBU &amp; Local Small Business Resources</td>
<td>Albuquerque, NM</td>
</tr>
</tbody>
</table>

Request a Virtual, 30 Minute 1:1 Supplier Engagement
- Hosted every 3rd Wednesday of the Month
- Email supplier@sandia.gov

Questions? Email: supplier@sandia.gov
Ryan Williamson

Waste Isolation Pilot Plant (WIPP)
Small Business Program Manager
WIPP is a National Solution

America’s only deep geologic repository for the permanent disposal of defense-generated transuranic (TRU) radioactive waste

Owned by the U.S. Department of Energy and managed and operated by contractor Nuclear Waste Partnership (NWP)
National Cleanup Mission

Total number of TRU waste sites cleaned up to date: 22
- 2,150 feet deep
- Eight disposal panels
- Four vertical shafts
- Controlled ventilation
- North Experimental Area
Underground excavation began in 1982

More than 12 miles of drift are mined underground
More than 3.4 million ft$^3$ of waste disposed

More than 269,360 waste containers underground
Preparing for Opportunities at WIPP

- Selected Opportunities Posted to WIPP Website
  - Website: http://www.wipp.energy.gov/nwp-procurement.asp
  - Sources Sought listings
  - Open Requests for Proposals

- Complete a NWP Supplier Application
  - Include all requested information
  - List applicable North American Industry Classification Codes (NAICS)

- Register in SAM.GOV
  - Make sure information in SAM.GOV is consistent with what is on your NWP Supplier Application
WIPP Procurement Page

Procurement

Opportunities

Sources Sought

Open Requests for Proposals

NWP General Terms & Conditions for Commercial Items (4-19, Rev. 5)

NWP General Provisions for Cost Reimbursement Contracts (GP/CR 12-20, Rev. 5)

NWP General Provisions for Firm Fixed Price Construction Subcontracts (11-21, Rev. 9)

NWP General Provisions for Firm Fixed Price Orders (12-20, Rev. 7)

Representations and Certifications Greater than $25,000

Approval/Variation Transmittal Register

Approval/Variation Request (May 2013 form)

Approval/Variation Request Comment Sheet

NWP Supplier Application

https://wipp.energy.gov/nwp-procurement.asp
## Top Subcontracting Categories in FY 2022

<table>
<thead>
<tr>
<th>NAICS</th>
<th>Category Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>238910</td>
<td>Site Preparation Contractors</td>
</tr>
<tr>
<td>561320</td>
<td>Temporary Help Services</td>
</tr>
<tr>
<td>332999</td>
<td>All Other Miscellaneous Fabricated Metal Product Manufacturing</td>
</tr>
<tr>
<td>541330</td>
<td>Engineering Services</td>
</tr>
<tr>
<td>334519</td>
<td>Other Measuring and Controlling Device Manufacturing</td>
</tr>
<tr>
<td>332439</td>
<td>Other Metal Container Manufacturing</td>
</tr>
<tr>
<td>541620</td>
<td>Environmental Consulting Services</td>
</tr>
<tr>
<td>541611</td>
<td>Administrative Management and General Management Consulting Services</td>
</tr>
<tr>
<td>333924</td>
<td>Industrial Truck, Tractor, Trailer and Stacker Machinery Manufacturing</td>
</tr>
<tr>
<td>333413</td>
<td>Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing</td>
</tr>
</tbody>
</table>
Major Activities at WIPP

- New Construction
- Infrastructure Projects
Looking Ahead

Current investments to improve infrastructure (next few years)

- 2023 – 19 projects (Electrical capacity/Solar Array, Contact-Handled/Remote-Handled)

Planned investments (longer term)

- New buildings
Denise Avila
The Borderplex Alliance of El Paso
Director of Strategic Initiatives
The Borderplex Alliance is an award-winning economic development and policy advocacy organization. The Alliance is independent, non-partisan, and private sector-led. Our mission is to bring jobs, hope, and opportunity to the region.

- Funded and Led by the Private Sector
- Partners with Community and Regional Organizations
- Focused on Business Recruitment, Expansion and Retention
- Provides Regional Advocacy

PAST PROJECTS

Regional Briefings
Connection to decision makers
Data Analysis
Site Selection Analysis
Strategy
Incentive Structure + Analysis
Industrial Tours
Advocacy
Business Consultations

SINCE 2013

The Borderplex Alliance has helped bring OVER 20,000 JOBS and $1.4 BILLION IN INVESTMENT to the Borderplex Region.

RECENT RECOGNITIONS

Economic Development Organization of the Year
International Economic Development Council
Community Economic Development Award
Texas Economic Development Council
Moving Forward Award
El Paso Hispanic Chamber of Commerce
“I can confidently say that there is no place that compares to the El Paso region. Our El Paso operation acts as a model plant to the whole Eaton system. Here, we experience low turnover and a continual increase in output, week over week. We are very pleased with our decision to have recently expanded our manufacturing footprint to El Paso.”

- Alex Mora, Site Executive at Eaton
The Borderplex Alliance

2025 ASCEND PLAN

QUICK FACTS

OVERVIEW
• 32 Goals, 139 Actions (28% complete)
• A Regional Focus – working across borders for collective prosperity
• Addresses shared regional priorities (developed via survey)
• Sets target industries and illuminates emerging opportunities

THE TOP 5 ECONOMIC DEVELOPMENT PRIORITIES
1.1) Business attraction, retention and expansion
2.2) New business creation
3.3) International trade promotion
4.4) Increasing wages
5.5) Improving the quality of life
The Borderplex Alliance

BUYER – SUPPLIER PROGRAM

Our Mission
The mission of Borderplex Buyer - Supplier Connections is to introduce and connect regional suppliers and large manufacturing companies.

*Borderslex Alliance aims to be your go-to buyer/supplier connector. We do not endorse any particular buyer or supplier.

Benefits
- Create awareness of the local suppliers in the region for buyers
- Helps buyers meet or exceed diversity goals
- Reduces buyers lead time for delivery
- Identify customer opportunities for local suppliers

How to Connect*
- Virtual presentation by buyer with suppliers invited
- In person small meeting with a few, select suppliers
- Small speed dating event (timed, tailored with special invitations)
- Supplier/Buyer Summit
The Borderplex Alliance

BUYER – SUPPLIER PROGRAM

WHAT MAKES US DIFFERENT?

• Personalized connections with buyers
• Introductions tailored to your company’s needs
• Data base of vetted suppliers
• No time investing required
• Follow ups to assure your company was able to connect with the suppliers