

The Leader in Empowering the World's Most Capable Soldiers



US Army Natick Soldier RD&E Center

20 November 2014

Benjamin Hall
 Director, Outreach & Business Development



The forecast data is for planning purposes, does not represent a pre-solicitation synopsis, does not constitute an invitation for bid or request for proposal, and is not a commitment by the government to purchase the desired products and services.

Natick Soldier Systems Center

78 Acres

459,000 Sq. Ft. of Lab Space

Total 174 Acres
(including 75 Family Housing units)

NSSC Partners

Research & Technology Collaborators



Product/Project Managers Development Partners



**Only Active Army Installation in New England
Birthplace of the Army**



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Natick Soldier RD&E Center

The Leader in Empowering the World's Most Capable Soldiers

Adding Value Through:

- Basic Science
- Technology Generation, Application, and Transition Enabling Rapid Fielding of the Right Equipment
- Soldier Systems Technology Integration and Transition
- Solving Field Problems Rapidly



ORGANIZATION

Leadership Structure Summary		
Type	Qty	Symbol
Senior Executive Service	1	SES
Technical Scientist	1	ST
Uniformed Military	38	AD
Total Government	709	DAC
Total Contractor	34	KTR
Fellows	59	Fellows
TOTAL	842	



Acting Director
Dr. Patrick Baker

SES X 1
STs X 3/1
DAC X 9
Fellows x 2

Office of Director

Chief Scientist
Dr. Charlene Mello



Senior Scientists

- ST, Behavior and Performance
Dr. Armand Cardello
- ST, Biological Anthropology
VACANT
- ST, Nanomaterials
VACANT



Associate Director for Operations & Outreach
Ms. Donna Bulger

DAC X 127
KTR x 2
Fellows x 4



Associate Director for Technical Plans & Portfolios
Mr. David Carney

DAC X 22
Fellows X 1



Associate Director for Science & Engineering
Mr. Craig Rettie

DAC X 547
KTR X 32
Fellows X 52



Military Deputy
COL Charles H. May

AD X 38
DAC X 4

- Workforce Development
- Resource Management
- Business Management
- Army Audit Readiness
- Foreign Intelligence and Security
- Information Management Office
- Operations Support

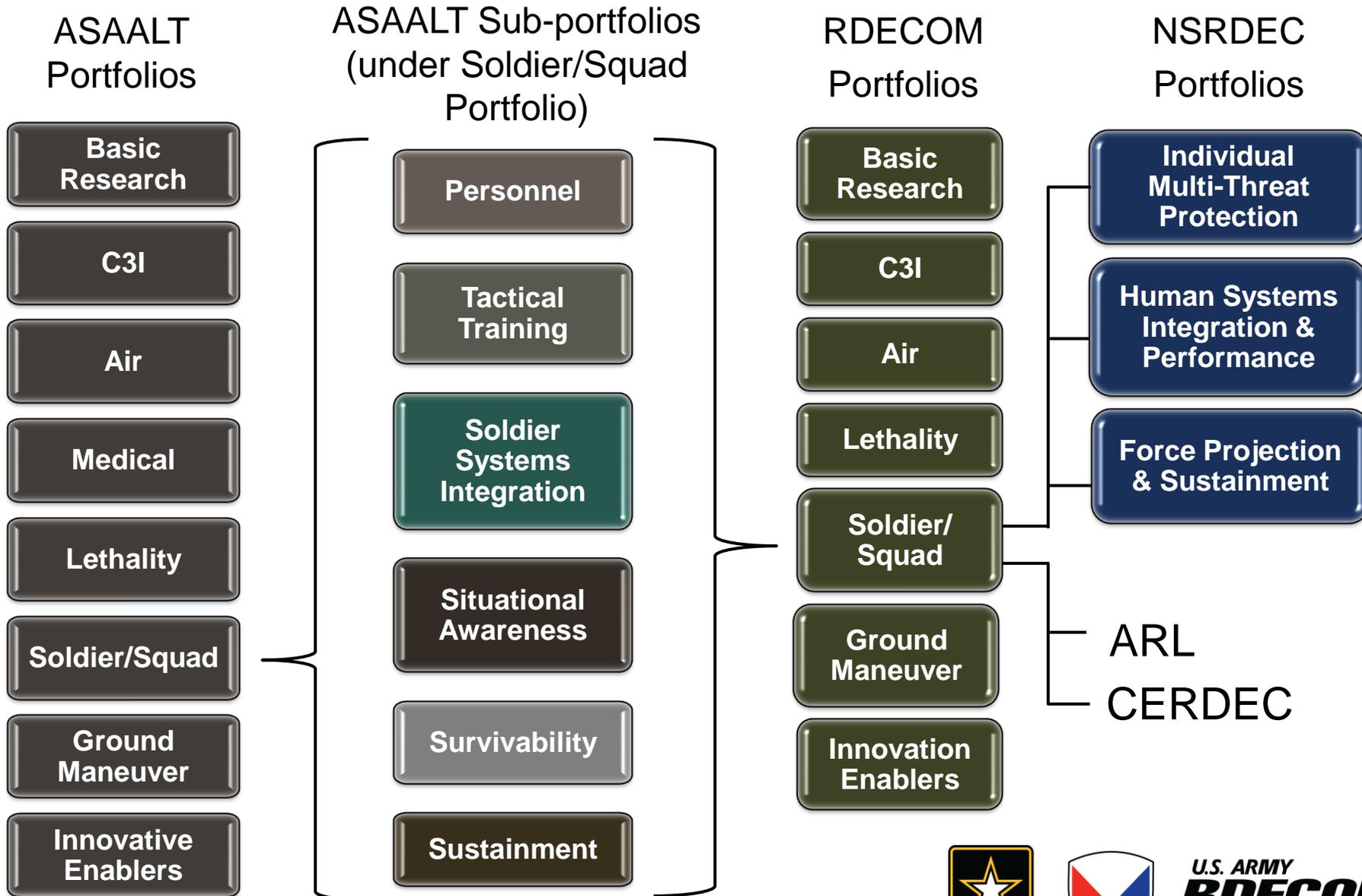
- Human Systems Integration & Performance Portfolio
- Individual Multi-Threat Protection Portfolio
- Force Projection & Sustainment Portfolio
- Portfolio Management Support
- Soldier Capabilities Integration Cell

- Warfighter Directorate
- Aerial Delivery Directorate
- DoD Combat Feeding Directorate
- Expeditionary Basing/Collective Protection
- Anthropocentric Soldier Systems Engineering

- Detachment Operations / Soldier Research Support
- Human Research Volunteer (HRV) Program
- Unit Ministry Team



PORTFOLIO MANAGEMENT



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NSRDEC: FOCUSED ON THE SOLDIER DOMAIN



Basic & Early Applied Research



Joint Service Combat Feeding



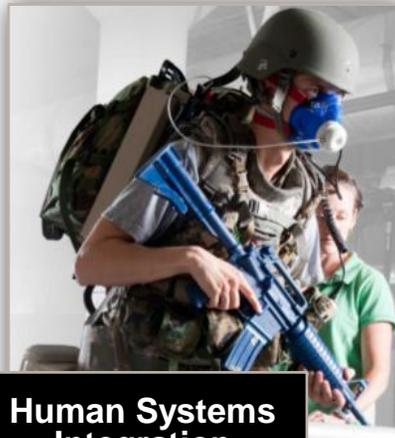
Clothing & Protective Equipment



Expeditionary Basing/Collective Protection



Airdrop/ Aerial Delivery



Human Systems Integration



Soldier Systems Engineering Architecture (SSEA)



Soldier Systems Engineering Architecture



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UNIQUE CAPABILITIES



Center for Military Biomechanics Research

Allows for 3D analysis of movement, measurement of external forces on the body, monitoring of muscle activity, assessment of O₂ consumption, and real-time mapping of pressure patterns



Ouellette Thermal Test Facility

Includes a propane fire cell, flame & thermal lab, laser lab, and CO₂ laser



3D Laser Scanning Lab

Whole body & head/face laser scanning system that enables measurements for current and next generation armor and helmet systems



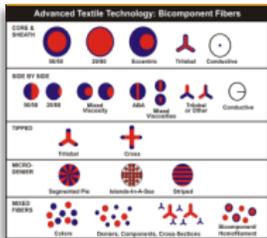
Cognitive Performance Lab

Virtual Reality & Mobile Cognitive Assessment Platform Capabilities



Polymer Film CoE

Enables R&D of new plastics and nanocomposites formulations at lab scale production level



High Performance Fiber Facility

One of a kind bi/tri-component fiber extrusion capability that enables the exploration of lightweight and reactive/responsive multi-functional fibers



Doriot Climatic Chambers

Tests the limits of human performance under extreme conditions. Primarily used for human research – where a dedicated group of Soldiers perform as human research volunteers.



Base Camp Integration Lab

Based at Fort Devens - Team Effort (Active and Reserve)
Two 150 man Force Provider Expeditionary Base Camps
Test and Improve Current Component Systems Develop
New Technologies for Future Use – Power & Water
Great Potential to Expand

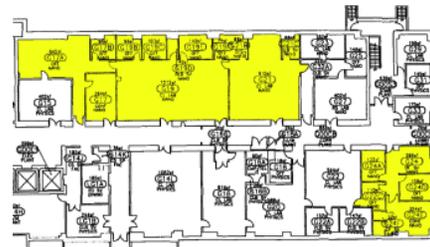


HEROES

UMass-Lowell Joint Research Innovation Collaboration

HEROES – Harnessing Emerging Research Opportunities to Empower Soldiers

- **Overall Goal:** create a joint research center to catalyze new ideas and innovations to empower Warfighters. Partnering for S&T Horizon Forecasting.
- **Collaborative Research Projects** addressing Soldier survivability, sustainability, mobility, combat effectiveness and field quality of life funded by a variety of sources.
- **Shared facilities** – 5,000 sq ft



HARNESSING EMERGING RESEARCH OPPORTUNITIES TO EMPOWER SOLDIERS



Partnership Opportunities

I. Unfunded Collaboration Mechanisms

- Cooperative Research and Development Agreement (CRADA)
- Testing Service Agreement (TSA)
- Patent License Agreement (PLA)
- Educational Partnership Agreement (EPA)
- Intergovernmental Personnel Agreement (IPA)

II. Opportunities for Funding

- Broad Agency Announcement (BAA)
- Unsolicited Proposal (UP)
- Small Business Innovation Research (SBIR)
- Rapid Innovation Fund (RIF)



Small Business Innovation Research

FY15 Topics

1. Aerial Delivery – Conductive Network for Parachute Fabrics
2. Combat Feeding – Single Process Multiplex Detection System for Food and Water Pathogens
3. Combat Feeding – Technologies for Modular Refrigeration
4. Expeditionary Basing – Lightweight Radiation Shielding for Transportable Rigid Wall Shelters
5. Expeditionary Basing – Radiant Floor Heating Technology for Shelters
6. Warfighter - Soldier and Small Unit (SSU) Performance and Cognitive Models for Behavior and Decision Making in Constructive Simulation



Broad Agency Announcement (BAA)

- NSRDEC funds extramural research programs via contracts, grants, or cooperative agreements.

<http://www.grants.gov>

- The BAA is continuously open, and accept proposals on a rolling basis. Pre-proposals may be submitted and will be evaluated at any time throughout the year.

<http://www3.natick.army.mil/NSRDEC-Broad-Agency-Announcement.aspx>



BAA For Basic and Applied Research

Solicitation Number: W911QY-13-R-0032

Effective from 1 March 2013 – 31 March 2015

- A. Combat Feeding Equipment and Systems
- B. Combat Ration Research and Development
- C. Warfighter Systems Technologies
- D. Shelters and Life Support Technologies for Contingency Basing
- E. Airdrop – Advanced Personnel and Cargo Airdrop Systems
- F. Textile Technologies
- G. Modeling and Simulation
- H. Warfighter Advanced Technologies
- I. Technology Enabled Capability Demonstrations (TECDs)



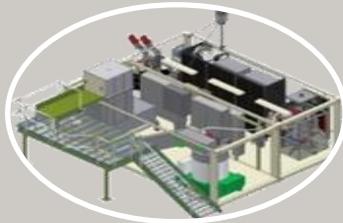
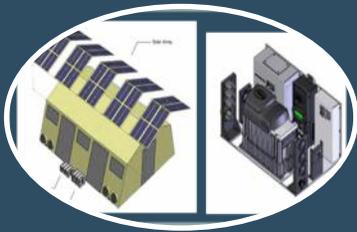
OVERVIEW - SUSTAINABILITY & LOGISTICS: BASING (4A) FOCUS AREAS AND ENABLING TECHNOLOGIES

STO 4a Focus Areas

Fuel Demand Reduction 25%

Water Demand Reduction 75%

Waste Reduction 50%



TECD Technology Thrust Areas

- Supply Side-Power Generation
- Supply Side-Alternative Thermal / Electric Energy
- Supply Side Power Control, Distribution, Storage
- Demand Side-HVAC
- Demand Side-Habitation Systems
- Demand Side-Organizational Systems

- Supply Side-Water Purification
- Supply Side-Water Generation
- Supply Side-Water Recycling & Repurposing
- Demand Side-Organizational Systems

- Source Reduction
- Waste Reduction and stabilization
- Waste to Energy
- Waste Re-purposing
- Water Based Liquid Waste Management
- Waste Management Analysis
- Planning and Management Tools

Enabling Technologies (Examples)

- Microgrids
- Integrated Energy Efficient Shelters (Liners, HVAC, Lighting)
- Fixed and Flexible Photovoltaics
- Energy Efficient Organizational Systems (Kitchen, Laundry, etc)

- Water Recycling & Reuse
- Water Quality Monitoring
- Water Efficient Organizational Systems (Kitchen, Laundry, Hygiene)
- Water Generation (Air, etc)

- Waste Source Reduction
- Waste to Energy Conversion
- Blackwater Dewatering

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STO 4a Opportunities for FY15

MUTLIPLE NEW CONTRACT S:

- Fuel demand reduction improvements
- Energy harvesting and smartmicrogrids
- Integrated energy efficient shelters (liners, HVAC, lighting)
- Fixed and Flexible Photovoltaics
- Energy Efficient Organizational Systems (Kitchen, Laundry, etc.)
- Water and waste reduction improvements

ESTIMATED VALUE: \$4.8M

**CONTRACTING CONTACT: Natick Contracting Division, Darlene Rideout
(darlene.l.rideout.civ@mail.mil) , 508-233-6134**

SOLICITATION #: unknown

ESTIMATED SOLICITATION RELEASE DATE: March 2015



Expeditionary Basing / Collective Protection Opportunities for FY15

NEW CONTRACTS:

- Shelter Systems
- Non-woven textiles
- Auto-leveling System for Rigid Wall Shelters
- Expeditionary Black Waste Treatment
- Improvements in Consumable Efficiencies
- FOB Water Demand Reduction
- Shelter Integrated Radiation Shielding

ESTIMATED VALUE: BAA \$2M / New \$5.4M = \$7.4M

**CONTRACTING CONTACT: Natick Contracting Division, Darlene Rideout
(darlene.l.rideout.civ@mail.mil) , 508-233-6134**

ESTIMATED SOLICITATIONS RELEASE DATE: FY15



Combat Feeding Opportunities for FY15

MULTIPLE CONTRACTS:

- Electric Kitchen equipment and support equipment,
- MRE bag production equipment (Lamination and paper coatings, biodegradable materials, retort pouch)
- Burner test and evaluation
- Solar powered beverage chiller
- Nutrition Analysis Software and training
- New Sink Sanitation Systems
- Refrigeration Systems (Navy)
- Food Service appliances (Navy galley)
- Paper Coatings for MRE and MRE containers

ESTIMATED VALUE: \$4M

CONTRACTING CONTACT: Natick Contracting Division, Darlene Rideout
(darlene.l.rideout.civ@mail.mil) , 508-233-6134

SOLICITATION #: unknown

ESTIMATED SOLICITATION RELEASE DATE: FY15



Individual Multi-Threat Protection Opportunities for FY15

MULTIPLE NEW CONTRACTS:

- Ballistic protection equipment
- Optical protection equipment
- Improved helmet pads for current helmet system
- Energy absorption for helmet
- Multi-function textiles
- Advanced testing devices for ballistic protection
- Body Armor

ESTIMATED VALUE: BAA \$1.3 M / New \$2.9 M = \$4.2M

CONTRACTING CONTACT: Natick Contracting Division, Darlene Rideout (darlene.l.rideout.civ@mail.mil) , 508-233-6134

SOLICITATION #: unknown

ESTIMATED SOLICITATION RELEASE DATE: FY15



Airdrop and Aerial Delivery Opportunities for FY15

MULTIPLE NEW CONTRACTS:

- Aerial delivery systems
- Helicopter sling load auto hookup device
- Lightweight parachute Fabric
- Static line auto activation device

ESTIMATED VALUE: \$875K

CONTRACTING CONTACT: Natick Contracting Division, Darlene Rideout (darlene.l.rideout.civ@mail.mil) , 508-233-6134

SOLICITATION #: unknown

ESTIMATED SOLICITATION RELEASE DATE: FY15



Leveraging location and facilities:

Open campus mindset

- Textile Industry Day, 24 & 25 June 2014, 300 industry representatives on installation
- Combat Feeding Industry Day, 30 October 2014, 100 industry representatives on installation



US Army Natick Soldier Research, Development & Engineering Center

THE SCIENCE BEHIND THE SOLDIER

*Yesterday,
Today and
Tomorrow*



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