

# Expeditionary Basing & Collective Protection Overview

Claudia Quigley  
Director



## **Vision:**

We aspire to be the premier technology/capability developer in the world for Expeditionary Basing & Collective Protection and DoD's supplier of choice for rapid prototyping, fabrication and engineering services.

## **Mission:**

We provide State of the Art technology, developmental services, global engineering support and world class rapid prototyping and fabrication services to an expanding DoD customer base.

## **Natick Core Values:**

Integrity, Warfighter & Customer Focus,  
Excellence, and Teamwork





**Dr. John Obusek**  
Director



**COL W. Collier Slade**  
Military Deputy



**Ms. Donna Bulger**  
Associate Director,  
Operations & Outreach

**Teams**  
Business & Operations  
Strategic Engagement &  
Outreach



**Ms. Dianne St. Jean**  
Associate Director  
Technology Plans &  
Programs

**Portfolios**  
Force Protection &  
Sustainment  
Individual Multi-Threat  
Protection  
Human Systems  
Integration &  
Performance



**Ms. Susan J. Butler**  
Associate Director  
Science &  
Engineering

**Directorates**  
Aerial Delivery  
Combat Feeding  
Expeditionary Basing/  
Collective Protection  
Warfighter

**TeCD**  
1B. Force Protection  
4A. Sustainability &  
Logistics-Basing



**Dr. John Gassner**  
Chief Scientist

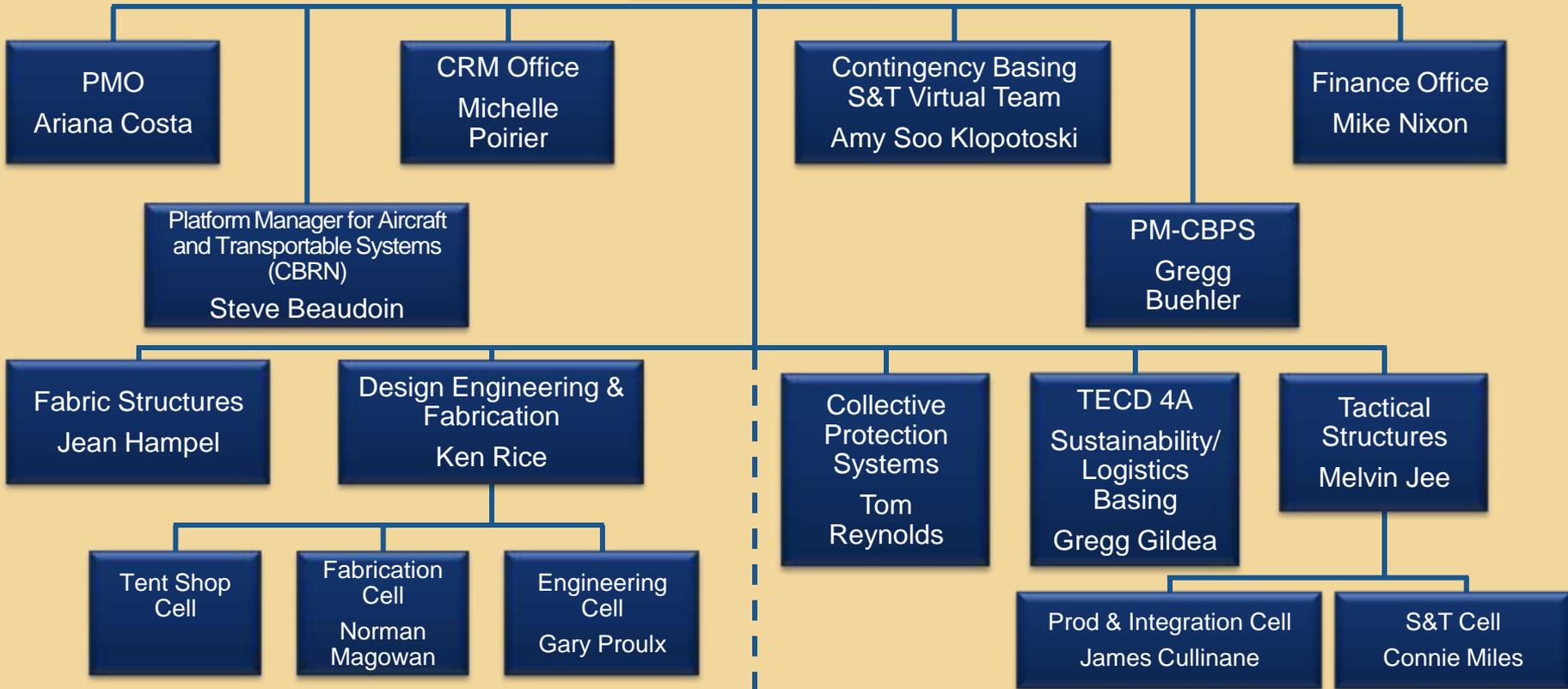


**Dr. Armand Cardello**  
Senior Scientist

# Expeditionary Basing & Collective Protection Organization

Force Projection & Sustainment  
Portfolio Manager  
Dave Carney

Director  
Claudia Quigley



CBRN – Chemical, Biological, Radiological, and Nuclear  
 PM-CBPS – Program Manager – Chem/Bio Protective Shelter  
 FP – Force Provider

Shelter Systems  
Don Stewardson

Combat Field Services & FP  
Mike Hope

PM FSS Matrix Teams

Contingency Basing Infrastructure  
John Munroe

PEO CS/CSS Matrix Team

## Basing/Shelter Science & Technology Shelter Integration & Product Support

- Discover, develop and mature technologies for Expeditionary Basing systems providing improved habitability, increased protection, and reduced logistics burden
- Develop cutting edge technologies leading to advances in Contingency Basing
- Design, engineer, and integrate rigid wall shelter systems for unique customer applications
- Provide Life Cycle Engineering Support to PM-FSS, PEO CS/CSS, JPM Protection, JPEO CBD TACOM-ILSC

## Technology Enabled Capability Demonstration 4A Sustainability & Logistics-Basing

- Heating/Cooling Power Reduction
- Power Sourcing Efficiency
- Water Use Reduction
- Waste Management Optimization
- Waste Disposal Efficiency
- Energy Conversion
- Quality of Life Studies

## Design Engineering & Fabrication Capabilities

- Engineering Services
- Strength Testing
- Mechanical Prototype & Fabrication
- Tent & Fabric Prototyping



## Collective Protection & JPM Protection Support

- Product Management
- Systems Engineering support
- CB Fabric and Airlock Design
- Product Sustainment Engineering
- ChemBio Systems Integration
- Rapid Prototyping (fabric & metal)
- Physical Properties Lab testing

We provide **systemic** solutions and innovative technologies for **protective enclaves** in **hostile environments**.

All operations from **Small Combat Units** to **Battalion** emanate from **integrated, energy efficient Expeditionary Base Camp** force projection platforms.

We provide shelter systems and expeditionary base camp capabilities for Soldiers in all **types of environments**, through the in-house and commercial development of **concepts and technologies**.

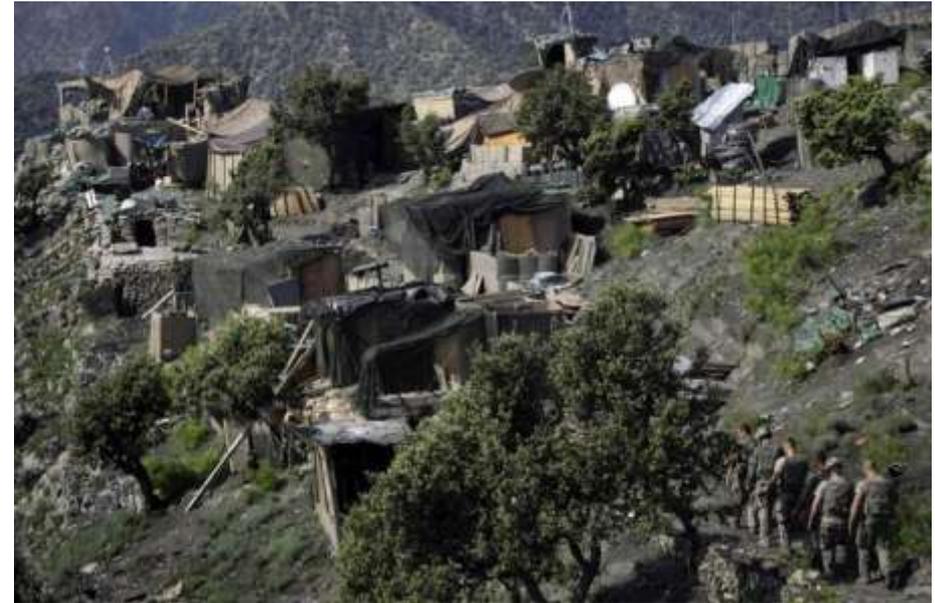
## *Leading Expeditionary Basing Science & Technology*

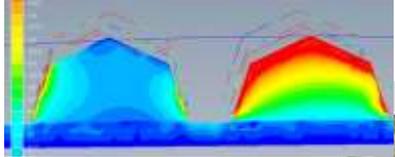
- S&T Support Contingency Basing Community of Practice
  - Headquarters of the Army G-4
- Advanced Energy Efficient Shelters Joint Service Lead
  - Office of the Secretary of Defense for Operational Energy Plans & Programs
- Joint Deployable Waste-to-Energy Technical Manager

We are key members on the Joint Committee on Tactical Shelters and an OSD program

## Current Conditions

- Ad hoc
- Inefficient
- High resource consumption
- Limited capabilities
- Austere/Lower quality of life





- Ad hoc
- Inefficient



of life



## Advancing & Leveraging Technology

- Rapidly Deployable Structures
- Resource Optimization & Logistics Reduction
  - High Thermal Efficiencies
  - Advanced, low energy HVAC
  - Renewable Energy
  - Energy Management & Control
  - Waste Management
  - Waterless Base Camp Technologies
- Trade off analysis –component technology capability vs. system level performance



## Current Conditions

- Ad hoc
- Inefficient

## Leveraging Technology



## Future State of the Art

- Breaks down basing systems into man-portable parts, eliminating need for MHE
- HMMWV/JLTV towable
- Self-sustaining capabilities
- Habitation systems optimized for efficiencies, reduced manpower requirements, and minimized logistics burden
- Enhanced quality of life
- Ruggedized and highly mobile basing systems to support the Squad and Small Unit

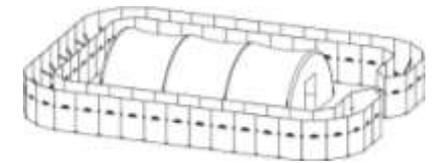


*Design, develop, test, and sustain advanced integrated systems and components that provide protection to warfighters on the battlefield in the harshest and most remote environments on earth*



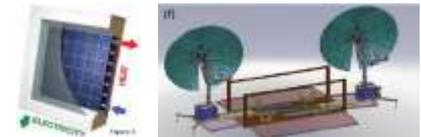
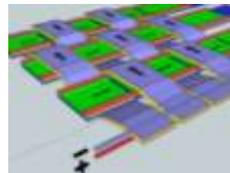
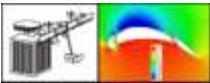
## Tactical integrated protection

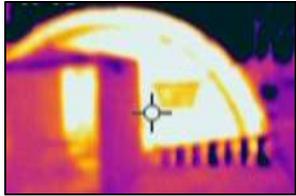
- Highly deployable Modular Ballistic Protection Systems for Tents and Rigid Wall Shelters
- Highly deployable Overhead Threat Protection
- Mobile Ballistic Protection for Remote Operations



## Re-supply Protection (Reduce burden/ vulnerability)

- Advanced Tactical Wind Energy Systems
- Advanced Tactical Solar Energy System
- Energy Efficient Lighting Systems





**Support program management offices in the design, development, test, and sustainment of advanced integrated systems and components that provide protection to warfighters on the battlefield in the harshest and most remote environments on earth**



## PM Force Sustainment Systems

- HVAC, Power, and Power Distribution evaluations and improvements
- Commercial product comparative analysis
- Shading Systems evaluations



## JPM Protection

- Joint Expeditionary Collective Protection (JECP)
- Collectively Protected Field Hospitals (CPFH)
- Contaminated Human Remains Pouch (CHRP)
- Chemical Biological Protection System (CBPS)
- Joint Strike Fighter Decon Containment System (JSFDCS)



## Support we provide:

- Engineering IPT lead & support
- Drawing development
- Test and Evaluation support
- Prototyping (fabric & metal)
- Configuration Management
- Lab testing



## *EB&CPD serves in Life Cycle Project Management roles in support of the Joint Program Manager - Protection*



CBPS-M8

- **Product Manager for the Chemical Biological Protective System (CBPS):**

- CBPS-M8
  - Currently fielded and in sustainment
  - Provide Total Life Cycle Management oversight
- CBPS-M8E1
  - Manage Cost Schedule and Performance
  - Operationally report to the JPM Protection
  - Life Cycle Manager
  - Currently in Production



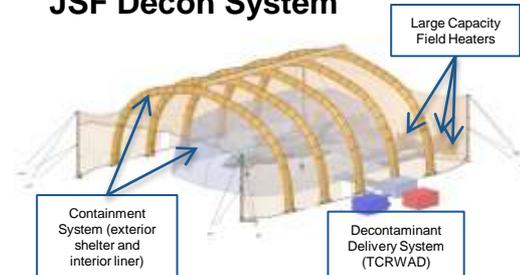
CBPS-M8E1

- **Platform Manager for Aircraft and Transportable System Chem/Bio/Rad (CBR) Survivability**

- Joint Strike Fighter Decontamination System
  - Manage Cost Schedule and Performance
- Joint Biological Aircraft Decontamination System (JBADS) Joint Capability Technology Demonstration
  - Manage all aspects of the demonstration for the JPM
- Assist DoD Program Managers in meeting their CBR Survivability Requirements
  - JPM Protections Technical manager for Aircraft and Transportable systems



JSF Decon System

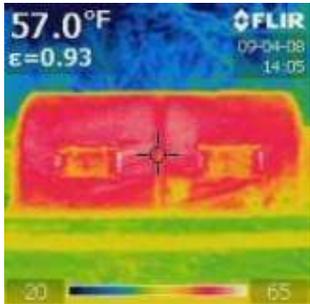
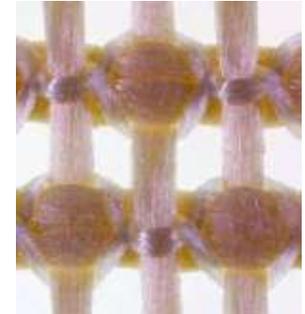




**Develop and mature cutting edge technologies for fabric shelter systems a contingency basing capabilities providing increased protection, improved habitability, and reduced logistics burden.**

## **Advanced Fabric Structures including Airbeam Shelters:**

- Maintenance Shelters
- Mobile Warehouses
- Large Command Posts
- CB Medical
- Backpackable



## **Insulation & Energy**

- Insulation
- Radiant Floor Heating



## **Collective Protection – CB Defense:**

- Overpressure/Negative Pressure Shelters
- CB Fabrics
- Reactive Airlocks
- Self-Decontaminating Fabrics

## **Waterless Systems**

- Laundries
- Latrines





**Engineer & develop advanced technologies for Rigid Wall Shelters used throughout DoD and provide sustainment & engineering support to the item manager and the user community.**

### Technologies:

- LED Lights
- Nanogrid Phase Balancing System
- Composite Laminates
- Autoleveling
- EMI Shielding/Cold Spray
- Radiation Shielding
- Antimicrobial Coating
- Thermal Coating

### Services:

- Engineering & Prototyping
- DoD Shelter Transportability Certification
- DoD Shelter Overload Waiver Authority
- Acquisition Support



## Sustainability & Logistics-Basing

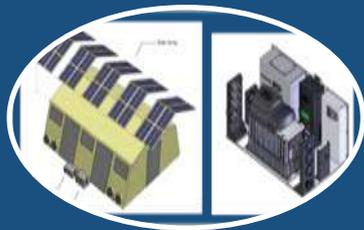
**Purpose :** To utilize a Systems Engineering approach to demonstrate integrated technology and non material solutions to reducing sustainment requirements for small contingency base operations via a suite of capabilities that reduce the need to deliver water and fuel to the base and the burden of having to collect, manage, and dispose of solid and liquid waste while maintaining a Force Provider Quality of Life.

**Results/Products (Operationally Relevant Demonstration of Integrated Capabilities That):**

- Reduce power requirements to environmentally condition habitation spaces (heat and cool)
- Increase power sourcing efficiency via more effective power generation and management
- Increase water use efficiency via water sourcing, recycling, repurposing, and management
- Reduce creation of solid and liquid waste products and optimize waste management
- Increase waste disposal efficiency via energy conversion and waste mitigation strategies

### TeCD4A Focus Areas

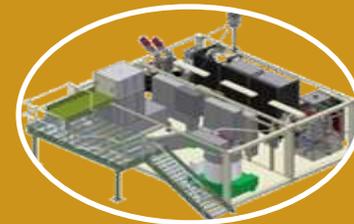
Fuel Demand Reduction 25%



Water Demand Reduction 75%



Waste Reduction 50%

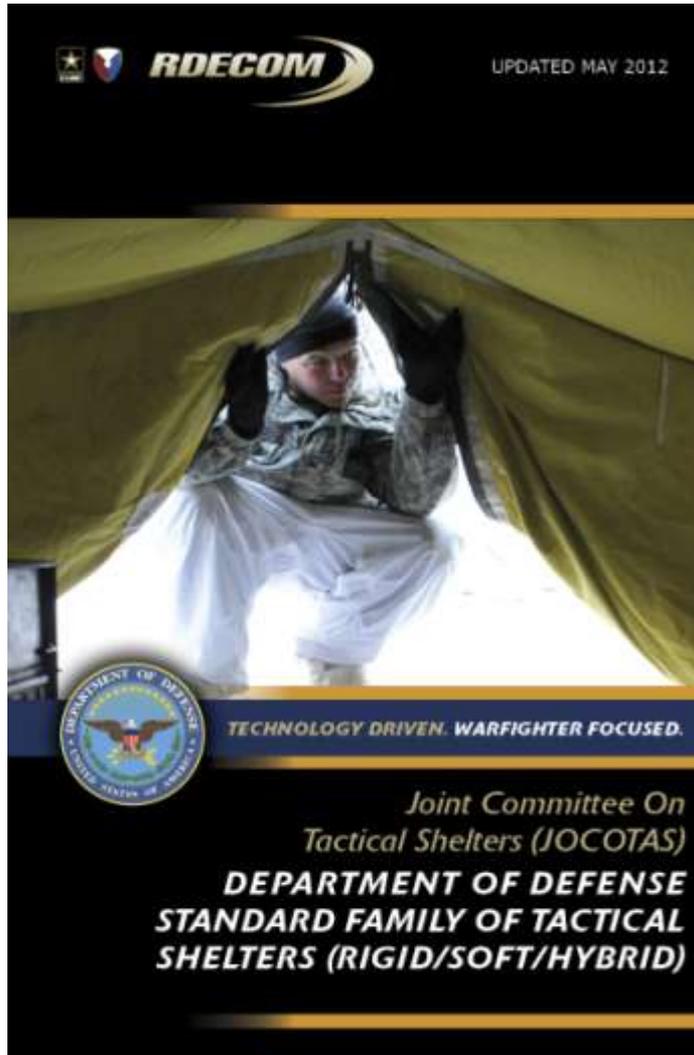


The Design Engineering & Fabrication Team (DEFT) offers capabilities in:

- Engineering Services - CAD design, finite element analysis, test design, data acquisition strategies, strength testing and rapid prototyping.
- Mechanical Prototype & Fabrication: Functional prototypes, custom shelter integration and refurbishment, field & food service equipment, small production runs of aerial delivery components.
- Tent & Fabric Prototyping: Fabricate and modify tents, tent components, plenums, ducts, and custom covers.



DEFT maintains strategic partnerships with vendors who provide additional capabilities such as anodizing, CARC painting, powder coating, hardening, annealing, and plastic injection molding.



**JOCOTAS** was formed in 1975 under Office of the Secretary of Defense (OSD) direction with the purpose to:

- Prevent the duplication of Tactical Shelter Research and Development.
- Eliminate the proliferation of non-standard tactical shelters in the DoD inventory.
- Maximize the usage of DoD Standard Family of Tactical Shelters.
- DOD Standard Shelters are
  - Highly mobile
  - Environmentally controlled
  - Fully Supported
  - Fully Tested





**Expandable Shelter Uparmor System (ESUS)**



**MBPS Stand-alone System**



**Energy Efficient Non-woven Composite Insulation**



**Airbeam Shelter with a Prototype Non-woven Insulation Liner**



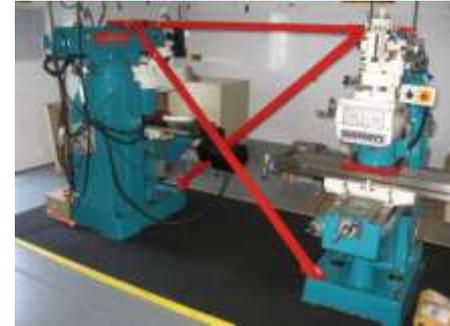
**Energy Efficient Shelter Testing - Kuwait**



**NASA Habitation Deployable Unit - Liner Prototype**



**Jordanian C3I Shelter**



**Theater Aviation Maintenance  
and Production System**



**Wrap up of LAMS Mission for NSRDEC**



**Contaminated Human  
Remains Pouch**



**Sacred Spaces**



## Joint Service

## Other Military

- US Army Medical Materiel Development Activity
- Missile Defense Agency
- Space and Naval Warfare Systems Command
- Joint Strike Fighter Program Office
- Joint Project Manager Protection
- Defense Threat Reduction Agency
- US Army Cold Regions Research and Engineering Laboratory
- ASA(ALT) System of Systems Engineering and Integration
- CENTCOM
- AFCENT
- ARL
- CERDEC
- OSD-OEIF
- PACOM
- NAVFAC
- ERDC
- TARDEC
- AFCEC



## Industry/ Other Government



## Academia

## TECD 4A



- Expeditionary Basing & Collective Protection website:  
<http://nsrdec.natick.army.mil/about/shelter/index.htm>
- Expeditionary Basing & Collective Protection email:  
[usarmy.natick.nsrdec.mbx.nati-amsrd-nsc-ad-b@mail.mil](mailto:usarmy.natick.nsrdec.mbx.nati-amsrd-nsc-ad-b@mail.mil)
- Technology Enabled Capability Demonstration – 4a (TECD – 4a) for Sustainability/Logistics-Basing website:  
<https://natiportal/NSRDEC/tecds/slbasing/default.aspx>
- Military Hotline: [usarmy.natick.nsrdec.mbx.nati-hotline-rdecom@mail.mil](mailto:usarmy.natick.nsrdec.mbx.nati-hotline-rdecom@mail.mil)