Shaping Future Fights Through Research and Development

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U.S. ARMY

US Army Corps of Engineers®

ERDC
ENGINEER RESEARCH & DEVELOPMENT CENTER

CONNECTING THE DOTS TO INNOVATION

ERDC Overview

Seven Laboratories in Four States

ERDC Headquarters
Vicksburg, Mississippi

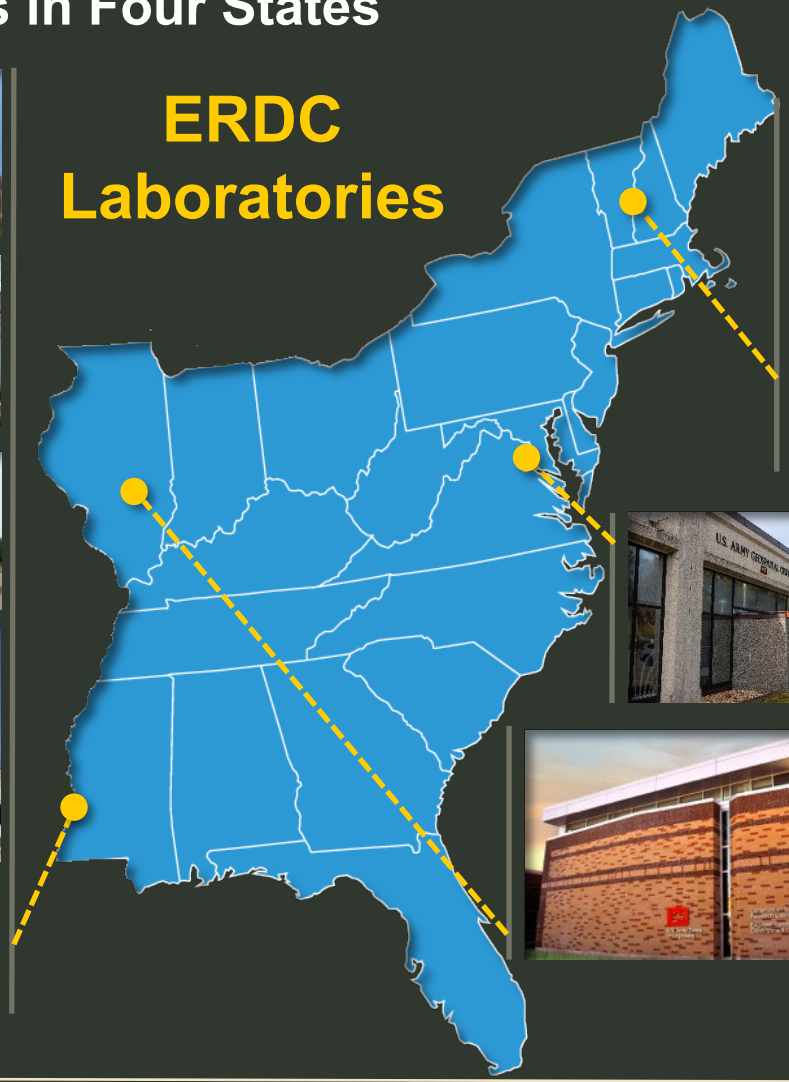
Coastal and Hydraulics Laboratory (CHL)

Environmental Laboratory (EL)

Geotechnical and Structures Laboratory (GSL)

Information Technology Laboratory (ITL)

ERDC Laboratories



Cold Regions Research and Engineering Laboratory (CRREL)
Hanover, New Hampshire

Geospatial Research Laboratory (GRL)
Alexandria, Virginia

Construction Engineering Research Laboratory (CERL)
Champaign, Illinois

Field Offices

Permafrost Tunnel Research Facility
Fox, Alaska

Alaska Research Office
Fairbanks, Alaska

Lewisville Aquatic Ecosystem Research Facility
Lewisville, Texas

Contingency Base Integration Technology Evaluation Center (CBITEC)
Fort Leonard Wood, Missouri

Field Research Facility
Duck, North Carolina

Corbin Field Station
Woodford, Virginia

Extreme Exposure Station
Treat Island, Maine

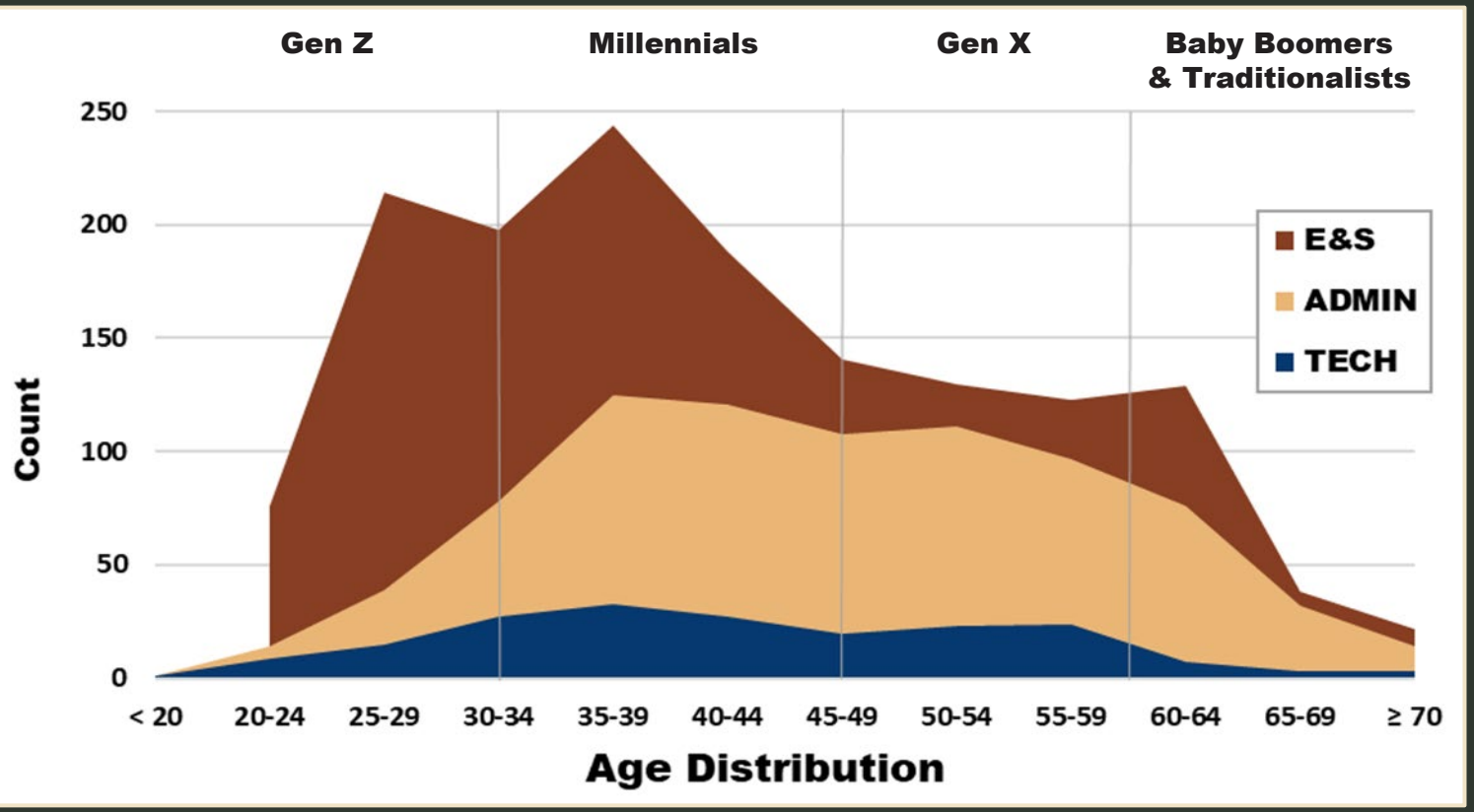
ERDC International Research Office
London, England

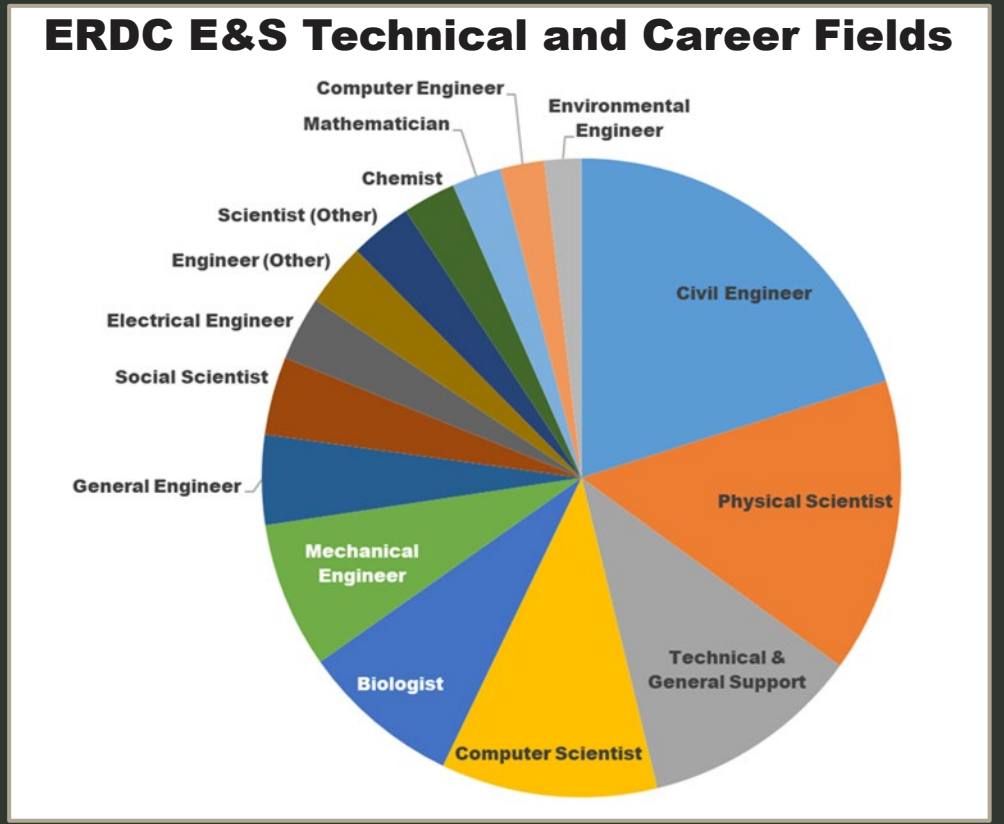
A World-Class Research & Development Organization that Discovers, Develops and Delivers New Ways to Make the World Safer and Better Every Day

ERDC's People Are Our Biggest Strength

ERDC Workforce in FY23

Civilian FTE Employees	Engineers & Scientist (E&S)	E&S w/Advanced Degrees	E&S w/PhDs
2,511 *	1,503	1,168	444



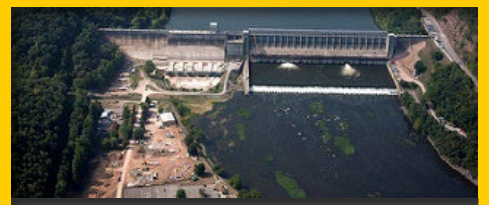


* Does not include other workforce population segments: student trainees, temp positions, active-duty military, AFP Interns, or contractors. Data reflects the End FY23, slide updated 12 OCT 2023.

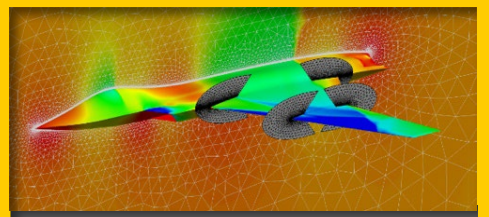
ERDC Delivers Innovative Solutions

ERDC'S Programmatic Approach Backed by Core Competencies for the Army

RESEARCH & DEVELOPMENT AREAS



CIVIL WORKS



ENGINEERED RESILIENT SYSTEMS

GEOSPATIAL RESEARCH AND ENGINEERING

INSTALLATION AND OPERATIONAL ENVIRONMENTS

MILITARY ENGINEERING

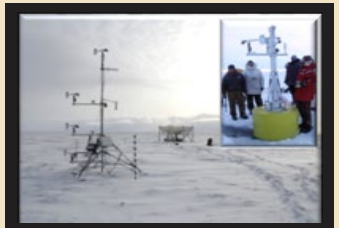
CORE COMPETENCIES

SPECIALIZED ERDC KNOWLEDGE THAT ENABLES OUR RESEARCH AND DEVELOPMENT AREAS

BATTLESPACE
TERRAIN MAPPING AND CHARACTERIZATION

BLAST AND WEAPONS EFFECTS
ON STRUCTURES AND GEO-MATERIALS

CIVIL AND MILITARY ENGINEERING



COLD REGIONS SCIENCE AND ENGINEERING

COASTAL, RIVER AND ENVIRONMENTAL ENGINEERING

COMPUTATIONAL PROTOTYPING OF MILITARY PLATFORMS

MILITARY INSTALLATIONS AND INFRASTRUCTURE

ERDC Partnerships

Hundreds of Government, Academia, Industry and International Partners

GOVERNMENT PARTNER EXAMPLES

DEPARTMENT OF DEFENSE · NASA · DEPARTMENT OF THE ARMY · NOAA · DEPARTMENT OF THE AIR FORCE · DEPARTMENT OF HOMELAND SECURITY · DEPARTMENT OF STATE · FORGE THE FUTURE · DEPARTMENT OF TRANSPORTATION · U.S. DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION · FEMA · USDA United States Department of Agriculture · USGS science for a changing world

ACADEMIA PARTNER EXAMPLES

Alcorn State University · The University of Mississippi · Jackson State University · Mississippi College · Oregon State University · Hinds Community College · University of South Alabama · Clemson University · The University of Toledo · Virginia Tech · Alabama A&M University · Georgia Institute of Technology · Carnegie Mellon University · United States Military Academy West Point · LSU · MIT · The University of Southern Mississippi · Alabama Crimson Tide · University of Georgia · NM State · Texas A&M · ASU · UAF University of Alaska Fairbanks · Oklahoma State University · Franklin Pierce University · University of Virginia

INDUSTRY PARTNER EXAMPLES

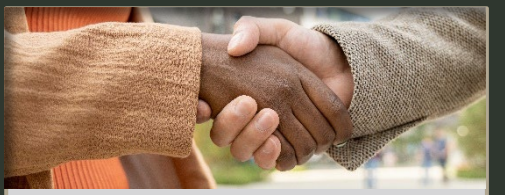
Applied Research Associates, Inc. · SOL Engineering Services · Hyperion Technology Group · Kenall · Raytheon · Edwards Design & Fabrication · Definitive Logic · EPRI Electric Power Research Institute · Harris · esri · Martin ecosystems · Quantum Signal · Lockheed Martin · BAE Systems · The Nature Conservancy · Kontek · Eaton · Alden Solving Flow Problems Since 1894

INTERNATIONAL PARTNERS

Australia · Canada · Brazil · Chile · Germany · Israel · Italy · Netherlands · Norway · Sweden · Switzerland · UK

ERDC International Research Office
London, England

POC: Dr. Catie Stephens, Director
Catherine.S.Stephens@usace.army.mil



CONNECT: Mechanisms & Authorities

ERDC WERX

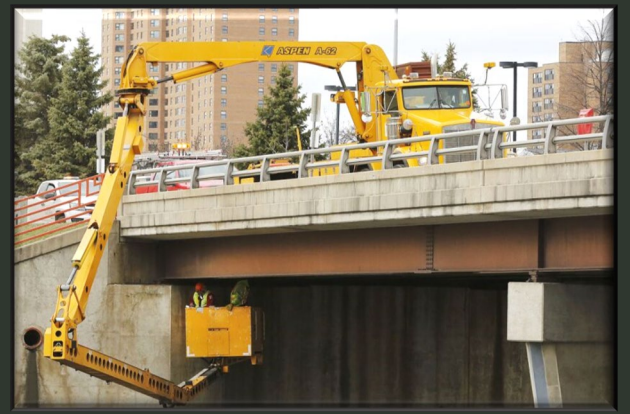
- Other Transaction Authority (OTA)
- Broad Agency Announcement (BAA) Authority
- Cooperative Ecosystem Studies Units (CESU) National Network

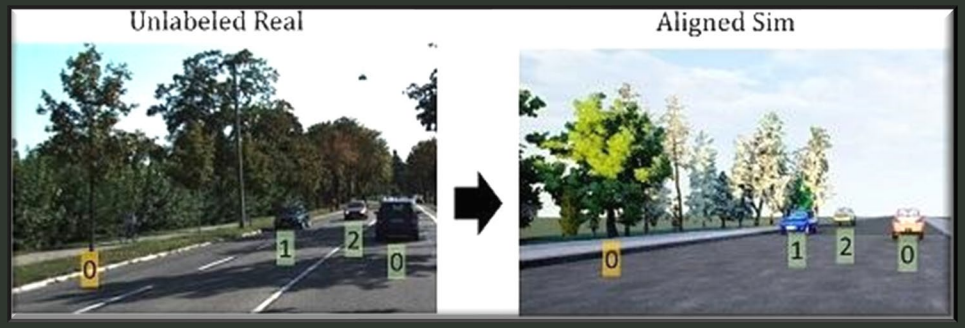
Ready to Purchase Commercial Solutions

Solve Today's Problems with Yesterday's Solutions

Commercial Solutions

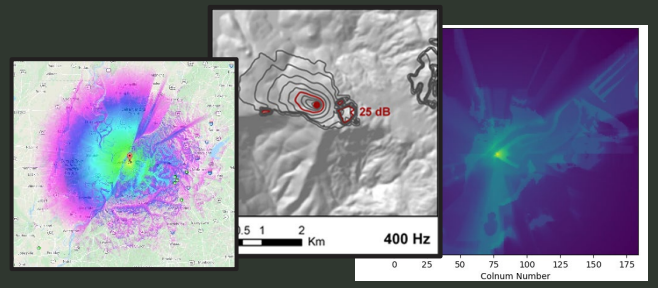
- Searchable solutions from many vendors
- Solve a specific problem or problems
- Minimal to no delay in acquiring the product
- Limited only to funding available to purchase
- Solves today's problem





Value of R&D for the Military

It Is Worth The Investment



Military R&D

- Allows for focused research into a specific area or problem
- Fills gaps in knowledge or capabilities
- Can be targeted for a military only application
- Is long-term focused to address future military needs and requirements
- Product focused, not profit focused

Drivers for Research

R&D Is Not Conducted In A Vacuum

Keys to Successful Execution

- ERDC conducts Research, Development, Test, and Evaluation (RDT&E) Programs at the Basic and Applied levels
- Successful execution of Military R&D requires close relationships with stakeholders, transition partners, and end users of the capability
- R&D is a long-term investment that is shaped by the multiple factors
- The ability to shift and adapt to those change factors is crucial

NGCV

AFC

LRPF

Network

AMD

STE

MSCoE

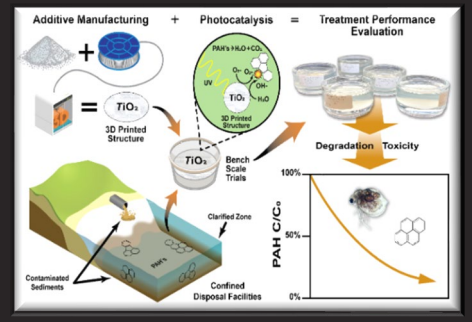
MCoE

Engineer School

Contested Logistics

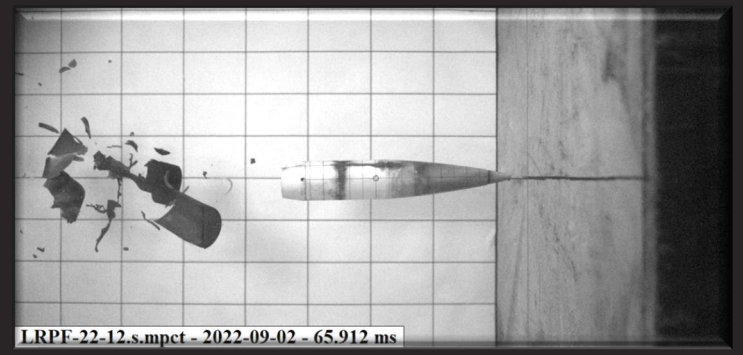
Understanding Materials & Manufacturing

- Materials Science
- Additive Construction
- 3D Printing
- Advanced Manufacturing
- Sustainable Materials
- Construction Materials-By-Design
- Repair and Retrofit Materials
- Manufacturing Process Optimization
- Advanced Computational Modeling



Weapons Effects

- Projectile Penetration
- Ballistic Research
- Fragment Simulation
- Blast Load Simulation
- Perforation Testing
- Damage Assessment
- Material Modeling

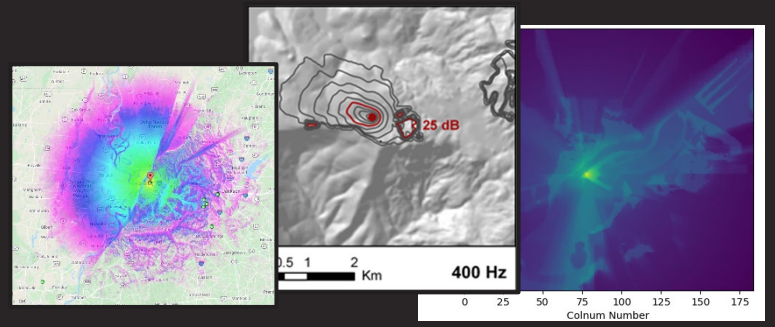


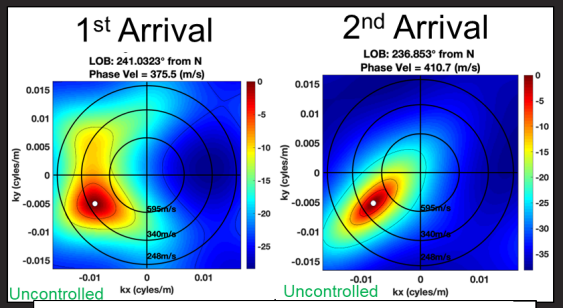
Increasing Mobility in Theater

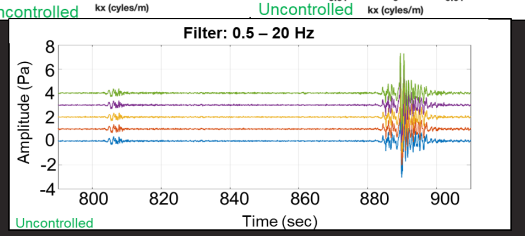
- Understanding Route Characterization and Degradation
- Assessment of Rail Lines
- Conventional and Expeditionary Airfields
- Port Facilities
- Civilian and Military Bridging MLCs
- Infrastructure Assessment

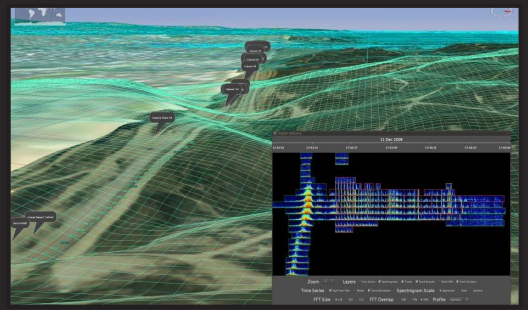
Understanding Through Sensing

- Situational Awareness
- Remote Assessment of Infrastructure
- Analysis of Threats
- Terrain Analysis
- Perimeter Security
- Void Detection and Monitoring









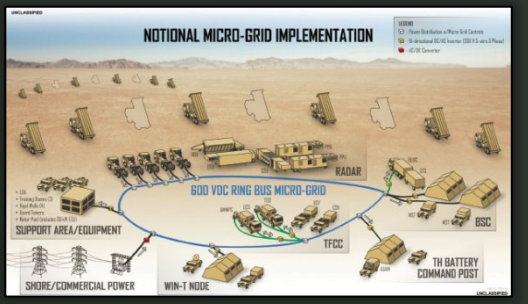
ERDC Presentations

Combat Logistics Stream C, 0900 – 0930 Day Three
Speakers: Mr. Dan Harder and Dr. Danielle Whitlow, both Research Civil Engineers at the US Army Engineer Research and Development Center (ERDC)
Title: Effective Use of Transportation During War
Overview: How planning tools and modern repair methods act as force multipliers to ensure adequate transportation infrastructure (airfields, bridges, railroads, seaports, etc) to move forces into and across theater

Combat Engineer Stream B, 1115 – 1145 Day Three
Speaker: Mr. Bjorn Oberg, Research Electrical Engineer at the US Army Engineer Research and Development Center (ERDC)
Title: Power Operations and Microgrids in Austere Environments
Overview: Using modern equipment to increase efficiency in power generation, distribution, and use through active monitoring and storage of electrical power on contingency bases

Combat Engineer Stream B, 1115 – 1145 Day Two
Speaker: Dr. Genevieve Pezzola, Research Civil Engineer at the US Army Engineer Research and Development Center (ERDC)
Title: Structural Hardening and Survivability Against New Threats
Overview: Modern methods to harden structures and protect critical infrastructure and Soldiers from threat weapon systems

Combat Engineer Stream A, 1445 – 1515 Day Three
Speaker: Ms. Emily Stickney, Research Civil Engineer, and Ms. Kate Staebell, Research Physical Scientist at the US Army Engineer Research and Development Center
Title: Military Hydrology – Total Hydrologic Awareness for Advanced Decision Making
Overview: Why understanding water on the battlefield is critical for mobility and counter-mobility plans and operations



ERDC

ENGINEER RESEARCH & DEVELOPMENT CENTER

DISCOVER • DEVELOP • DELIVER

New ways to make the world safer and better

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U.S. Army Engineer Research and Development Center

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601-634-3366

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