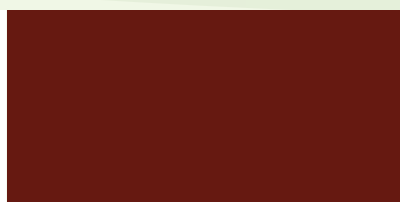




National Defense Center for
Energy and Environment

2013 Annual Report



Our Mission

The NDCEE was established to help Department of Defense (DoD) installations, ranges, weapon systems, and the Warfighter achieve performance advantages, enhance efficiency and cost effectiveness, and comply with regulations. Our mission is to transition technology solutions in support of the DoD as it strives to maintain readiness, meet sustainability goals, and support Warfighters at home and abroad.

In support of our NDCEE mission, we conduct the following Research, Development, Test and Evaluation (RDT&E) activities:

- Provide a joint framework for defining and identifying common environmental, safety, occupational health, and energy (ESOHE) requirements across the DoD
- Make available a proven contractual tool to:
 - Conduct assessments, provide technology development expertise, and execute unbiased testing efforts of potential ESOHE alternative solutions
 - Demonstrate, validate, and transition technologies to DoD and industry, ensuring solutions are systematically considered for the widest possible application
 - Provide train-the-trainer services that support the fielding of new, validated technologies

The purpose of this Annual Report is to ensure the reader understands what the NDCEE is, its capabilities, what the NDCEE did in 2013, and will be doing. We look forward to hearing your comments. We also welcome your ideas on any potential technology or other collaborations.

Photo Credits

Cover - training, U.S. Army; sailors, U.S. Navy; pilot, U.S. Air Force; ammunition, U.S. Air Force. Page 12 - warfighters, DoD. Page 17 - demilitarization, U.S. Army. Page 18 - IED event, U.S. Army; hydraulic equipment, U.S. Navy. Page 20 - QWE, Christina Graber/U.S. Army Public Health Command; sea disposal, U.S. Army.

A Message from the Office of the Executive Agent



"The NDCEE is a critical part of my organization on identifying and solving ESOHE problems. Over the past year, we have continued to transition cutting-edge technologies from the theoretical to practical application ensuring their widest application. In this report you will read overviews on over 40 technologies. I encourage you to seek more information and ask questions regarding the efforts the NDCEE has undertaken and can investigate on your behalf. Challenge the NDCEE. The NDCEE doesn't just look at a technology for what it currently does, but explores what it can do to address our unique ESOHE issues. The NDCEE is your program safeguarding the Warfighter's ESOHE needs. All ideas are considered and through collaborative action, the right technologies will be transitioned."

– Honorable Katherine Hammack, Assistant Secretary of the Army for Installations, Energy and Environment



"The NDCEE continues to provide the DoD with a responsive forum for ESOHE needs, by sustaining a community of experts and an extensive library of technologies. Through continued collaborations and re-energizing working groups, the NDCEE provides a productive platform for research, demonstration, validation, and transition of sustainable technologies. NDCEE project teams strategize and collaborate on technology gaps, with the end result being lives saved and our environment protected. These challenging times remind us we must join forces to guarantee DoD readiness levels remain high. The NDCEE is the program in which key ESOHE collaborations consistently occur. In this year's Annual Report, you will see the NDCEE breadth of knowledge spans across all Services and our technologies are implemented across continents.

We are grateful for our current engagements and project teams, while looking forward to future professional relationships and endeavors to remain agile and relevant."

– Hershell "Hew" E. Wolfe, Deputy Assistant Secretary of the Army (Environment, Safety, and Occupational Health), and Department of Defense Executive Agent for the National Defense Center for Energy and Environment

What is the NDCEE?

DoD Technical Resource

The NDCEE is a resource of ESOHE technical expertise, collaborations, and solutions addressing priority DoD challenges. As a center of excellence, we provide technology demonstration, validation, and implementation, as well as other technical services to Warfighters, all Services, and our Nation. We have demonstrated and/or transitioned more than 300 advanced technology solutions. Examples of our efforts include improving ammunition production at Continental United States (CONUS) plants, identifying best management practices for 12 installations within the Chesapeake Bay watershed, examining operations in the Mid-East and Africa to conserve and sustain water and energy, and developing tools to more efficiently perform safety and health hazard surveys in military shops and processes throughout CONUS and Asia.

We meet specific end-user needs while emphasizing risk reduction, cost savings, enhanced readiness, and ESOHE excellence. This is accomplished by pulling in the right mix of subject matter experts, technology providers, and others to ensure that requirements are well understood, the full spectrum of solutions is considered, and tradeoffs are holistically evaluated and addressed.



Situationally Aware

We successfully operate in both the tactical and strategic world every day. With the U.S. Army Research, Development, and Engineering Command (RDECOM) managing our daily execution and DASA (ESOH) providing strategic leadership, the NDCEE program has a unique holistic view. Intertwined with that view are the practicalities faced by those in the field, who relay real-time challenges to our problem solvers. Our diversified team of engineers and scientists, in partnership with Technical Monitors, provide timely feedback to both end users and decision makers, while our leadership influences policy and collaborates across DoD offices. NDCEE experts are in step with changing requirements, provide reach back into DoD laboratories, and understand acquisition program needs.

Via the NDCEE Technical Working Group and other outreach efforts, we have situational awareness of common ESOHE requirements across the Services. Repeat customers continue to leverage and build the NDCEE knowledge base. We synchronize efforts across the DoD, using input from academia, research institutions, professional technical organizations, working groups, and stakeholders to get the best solution in the most efficient manner.

Technology Experts

The NDCEE is a leader in applying technological innovations contributing to the Warfighter's mission success. Through its expertise, the NDCEE advances the technology readiness level (TRL) of solutions and fields proven technologies, averaging an increase of 2 TRLs as a result of our efforts. The NDCEE applies a four-phase technology transition process:

Assessment (TRL 1-8): define the problem and identify potential solutions; this means ensuring end-user needs are well understood, and obtaining and evaluating technical, economic, and lifecycle data on current and alternative technologies

Systems Integration and Testing (TRL 3-5): advance scientific concepts and research towards tangible and integrated technical solutions; activities may involve preliminary design, system or process development and fabrication, prototyping, computer modeling, and bench-scale or laboratory testing

Demonstration/Validation (TRL 6-8): optimize, test, and evaluate potential technology alternatives against user requirements; evaluation objectives may include feasibility, optimization, and/or operational acceptance testing

Transition (TRL 8-9): field validated technologies for installation and weapon system end users; fielding may involve implementation, start-up, training, and/or other support efforts.

NDCEE projects often span multiple years. The Technology Index lists all of the technologies addressed by projects active in 2013 although some activities may have occurred in a prior year. See page 16.

"(The Fort Meade) Industrial Hygiene function was able to "pass" their assessment only as a result of previous NDCEE Industrial Hygiene shop evaluations."

– Dr. Michael A. Pannell, Industrial Hygiene Consultant, Northern Regional Medical Command

Highlights

Early conceptual and design choices have major long-term impacts on cost, human health, and the environment. Working with aircraft manufacturers, the Navy, and the Office of the Deputy Under Secretary of Defense, we developed and demonstrated an **Economic Input-Output Life Cycle Assessment Tool** to monetize ESOH impacts of candidate weapon systems and platforms. This visualization tool allows decision makers to rank alternatives across 23 mission, human health, and environmental impact categories.

Workers face noise and chemical exposures, cold and heat stress, and ergonomic hazards. We created the **Industrial Hygiene (IH) Companion**, a mobile app to facilitate collecting and managing IH and workplace hazard information. This tool streamlines the process of conducting noise and ventilation surveys and assists with increasing hazard recognition and data management efficiency.

Providing forward and critical remote areas with water and fuel is expensive and difficult. To decrease water and electrical usage at Camp Lemonnier in Djibouti (CLDJ) without affecting mission readiness, the Naval Facilities Engineering Command Engineering and Expeditionary Warfare Center teamed with us to evaluate **filtration and disinfection** methods for laundry wastewater recycling and assist with a **heat pump water heater** demonstration. Testing will occur at Port Hueneme and CLDJ in 2014.

Corrosion destroys equipment, decreasing readiness and reliability while increasing maintenance and other ownership costs. To enable detection of corrosion under paint (CUP) for Army aviation applications, we demonstrated four **non-destructive testing (NDT)** techniques using **CUP Test Standards** we built. Each technique could detect CUP within the Standards to varying degrees. With NDT, costly, unneeded repairs and repainting can be avoided, without compromising safety.

Sustainability Trailblazers

For the DoD, sustainability means meeting the Warfighter's current and future needs. The NDCEE concentrates on three key sustainability aspects: environment, safety and occupational health (SOH), and energy.

Environment represents those resources our nation requires to survive and prosper. Given its potential impact to land, sea, and air, the DoD plays a key environmental stewardship role. With the NDCEE's aid, the Services are operating more efficiently by cutting waste and air emissions, using less water and material, switching to biobased products, and managing land use to meet mission, community, and wildlife needs.

People are the DoD's most valuable asset. For every project, the NDCEE evaluates SOH factors for the protection and betterment of personnel, family members, and the public. The NDCEE places a special emphasis on identifying and mitigating workplace injuries and industrial hygiene issues – providing the safest working and training conditions.

Energy powers our transportation, operations, and homes. Through its size and commitment, the DoD is a trailblazer in reducing energy needs and increasing energy surety and security. The NDCEE continues to reduce the DoD's fossil fuel consumption through process efficiencies, net zero energy initiatives, and renewable energy alternatives.

"Sustainable products are important to me for two reasons. First of all is because our training lands are National Forest lands. By using sustainable products it minimizes our impact on training lands and makes us a good neighbor and good steward for Forest Service lands. The other important aspect is safety. The Marines that are entrusted to my care are safer with sustainable products than they would be with the harsher products that we have now."

– Doug Lister, MCMWTC Environmental Compliance Manager

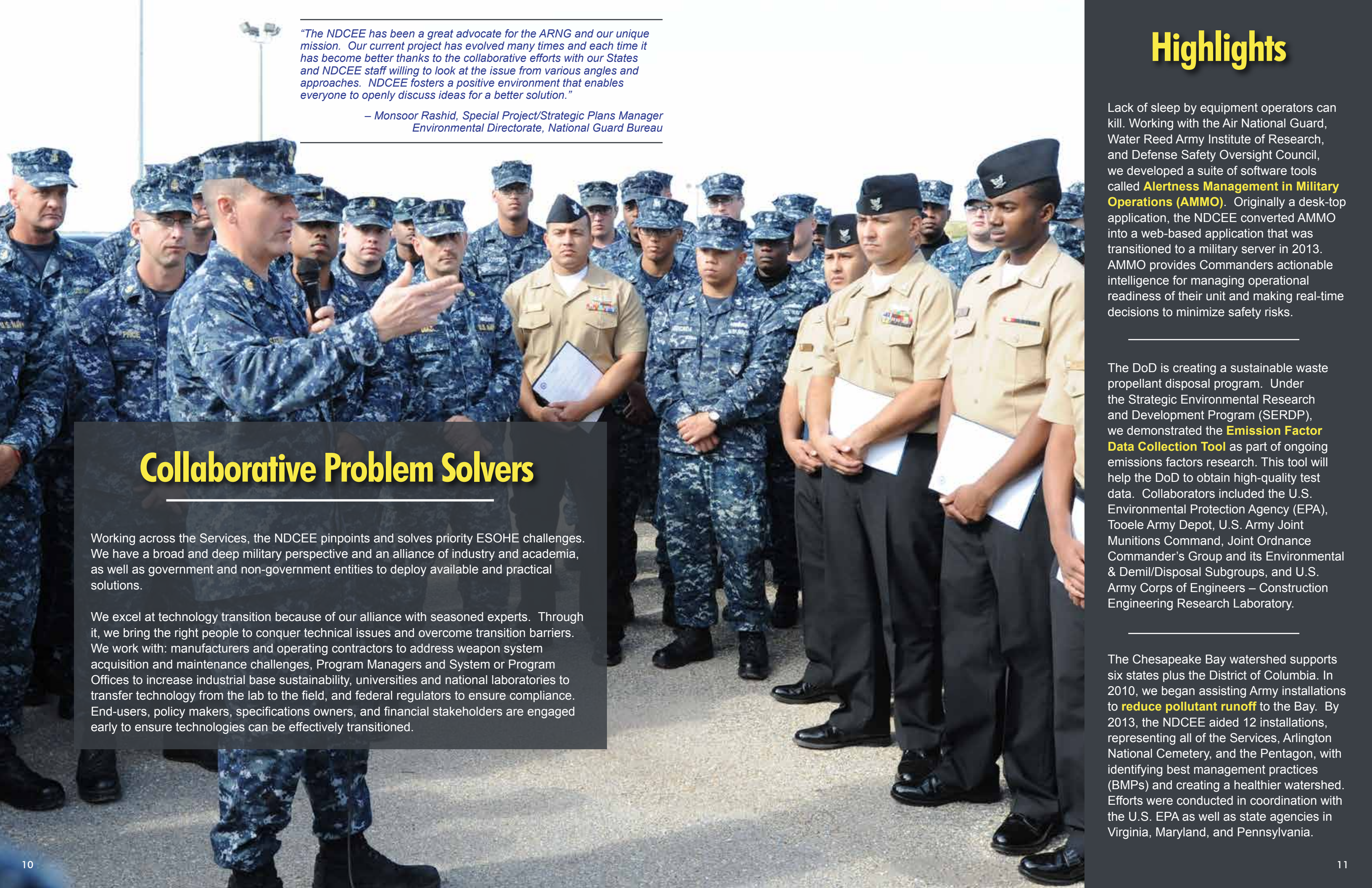
Highlights

Net Zero (NZ) is a strategy for reducing and offsetting resource consumption. In 2013, we continued aiding Army NZ pilot sites with achieving their respective NZ energy, water, or waste goals. Fort Bliss is striving to be NZ in all three areas by 2020. For that base, we produced an **integrated NZ plan** so recommended actions can be implemented based on budgets, personnel limitations and other factors. A similar plan will be finalized for Camp Buehring in 2014.

The U.S. Air Force (USAF) energy strategic plan is composed of 4 goals: 1) improve resiliency, 2) reduce demand, 3) assure supply, and 4) foster an energy aware culture. The **Air Force Enterprise Energy Management Framework Dashboard (AFEEFD)**, developed and validated by us, is an interactive web-based reporting tool. Accessible by all USAF personnel, it clearly explains the USAF's progress towards its goals across the enterprise.

We are assisting the U.S. Army Africa with improving situational awareness of sites with natural and cultural significance. In coordination with the Combatant Command Cultural Heritage Action Group, we are developing the **Consolidated Environmental Resource Database Information Process (CERDIP)**, a systematic process for identifying and communicating the location of these sites. CERDIP will be demonstrated and validated using five African countries.

In 2013, we conducted IH surveys at 2,558 shops within 19 installations on behalf of the Army Public Health Command. The NDCEE also produced an improved method for the **Defense Occupational and Environmental Health Readiness System (DOEHRS)** to enhance consistency of collecting, analyzing, managing and utilizing IH information. This methodology will allow Commanders and Army IH leaders to balance and prioritize resources while promoting a better quality of work environment for military and civilian personnel.



“The NDCEE has been a great advocate for the ARNG and our unique mission. Our current project has evolved many times and each time it has become better thanks to the collaborative efforts with our States and NDCEE staff willing to look at the issue from various angles and approaches. NDCEE fosters a positive environment that enables everyone to openly discuss ideas for a better solution.”

*– Monsoor Rashid, Special Project/Strategic Plans Manager
Environmental Directorate, National Guard Bureau*

Collaborative Problem Solvers

Working across the Services, the NDCEE pinpoints and solves priority ESOHE challenges. We have a broad and deep military perspective and an alliance of industry and academia, as well as government and non-government entities to deploy available and practical solutions.

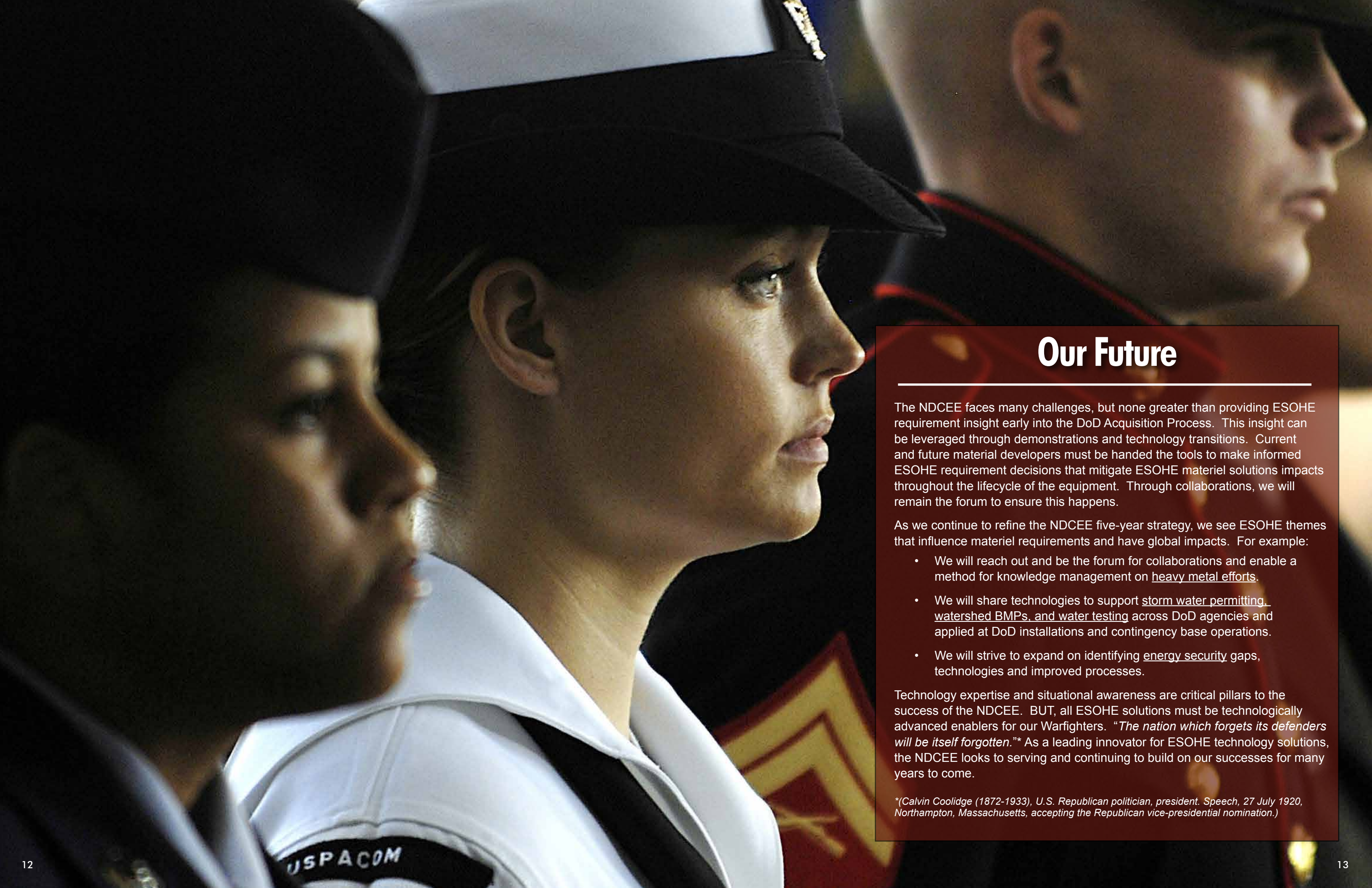
We excel at technology transition because of our alliance with seasoned experts. Through it, we bring the right people to conquer technical issues and overcome transition barriers. We work with: manufacturers and operating contractors to address weapon system acquisition and maintenance challenges, Program Managers and System or Program Offices to increase industrial base sustainability, universities and national laboratories to transfer technology from the lab to the field, and federal regulators to ensure compliance. End-users, policy makers, specifications owners, and financial stakeholders are engaged early to ensure technologies can be effectively transitioned.

Highlights

Lack of sleep by equipment operators can kill. Working with the Air National Guard, Water Reed Army Institute of Research, and Defense Safety Oversight Council, we developed a suite of software tools called **Alertness Management in Military Operations (AMMO)**. Originally a desk-top application, the NDCEE converted AMMO into a web-based application that was transitioned to a military server in 2013. AMMO provides Commanders actionable intelligence for managing operational readiness of their unit and making real-time decisions to minimize safety risks.

The DoD is creating a sustainable waste propellant disposal program. Under the Strategic Environmental Research and Development Program (SERDP), we demonstrated the **Emission Factor Data Collection Tool** as part of ongoing emissions factors research. This tool will help the DoD to obtain high-quality test data. Collaborators included the U.S. Environmental Protection Agency (EPA), Tooele Army Depot, U.S. Army Joint Munitions Command, Joint Ordnance Commander’s Group and its Environmental & Demil/Disposal Subgroups, and U.S. Army Corps of Engineers – Construction Engineering Research Laboratory.

The Chesapeake Bay watershed supports six states plus the District of Columbia. In 2010, we began assisting Army installations to **reduce pollutant runoff** to the Bay. By 2013, the NDCEE aided 12 installations, representing all of the Services, Arlington National Cemetery, and the Pentagon, with identifying best management practices (BMPs) and creating a healthier watershed. Efforts were conducted in coordination with the U.S. EPA as well as state agencies in Virginia, Maryland, and Pennsylvania.



Our Future

The NDCEE faces many challenges, but none greater than providing ESOHE requirement insight early into the DoD Acquisition Process. This insight can be leveraged through demonstrations and technology transitions. Current and future material developers must be handed the tools to make informed ESOHE requirement decisions that mitigate ESOHE materiel solutions impacts throughout the lifecycle of the equipment. Through collaborations, we will remain the forum to ensure this happens.

As we continue to refine the NDCEE five-year strategy, we see ESOHE themes that influence materiel requirements and have global impacts. For example:

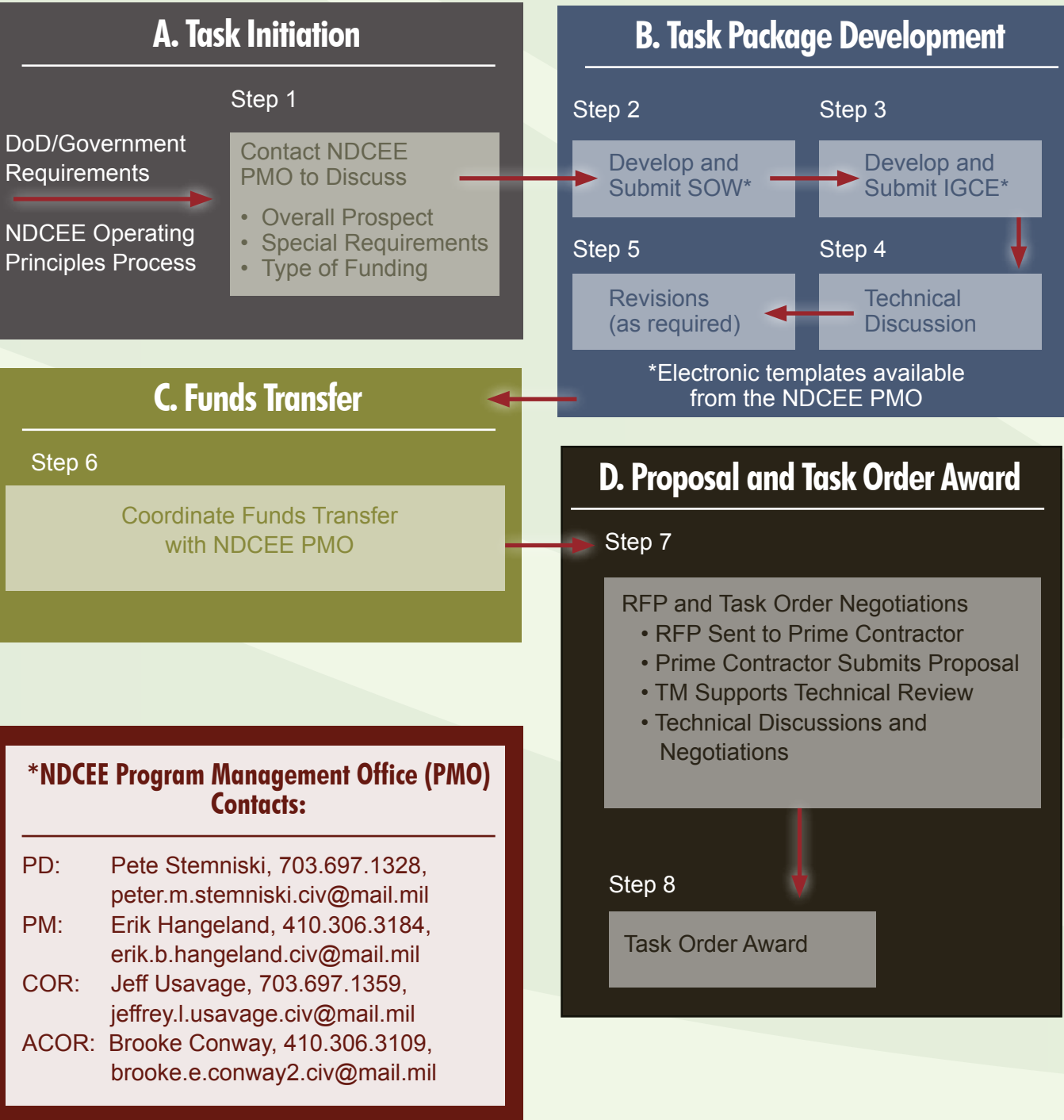
- We will reach out and be the forum for collaborations and enable a method for knowledge management on heavy metal efforts.
- We will share technologies to support storm water permitting, watershed BMPs, and water testing across DoD agencies and applied at DoD installations and contingency base operations.
- We will strive to expand on identifying energy security gaps, technologies and improved processes.

Technology expertise and situational awareness are critical pillars to the success of the NDCEE. BUT, all ESOHE solutions must be technologically advanced enablers for our Warfighters. *“The nation which forgets its defenders will be itself forgotten.”** As a leading innovator for ESOHE technology solutions, the NDCEE looks to serving and continuing to build on our successes for many years to come.

**(Calvin Coolidge (1872-1933), U.S. Republican politician, president. Speech, 27 July 1920, Northampton, Massachusetts, accepting the Republican vice-presidential nomination.)*

How To Do Business With The NDCEE

The NDCEE is available to DoD and all federal agencies. Our customers benefit from leveraging the Army's investment in the NDCEE program infrastructure and its streamlined contract management and project execution. There is no administrative fee for using the NDCEE contract vehicle, allowing stakeholders to receive the maximum return on their RDT&E investments.



Achievements

In 2013, the NDCEE continued the critical mission it began over 20 years ago: identifying, demonstrating, evaluating, and fielding technologies in support of DoD readiness, sustainability, and the Warfighter.

Operational

28 task orders completed in 2013

16 task orders awarded, in addition to several cost modifications received, increasing dollars on contract by **\$12M**

46% of subcontracted dollars to date awarded to small businesses

more than 175 client and stakeholder organizations served

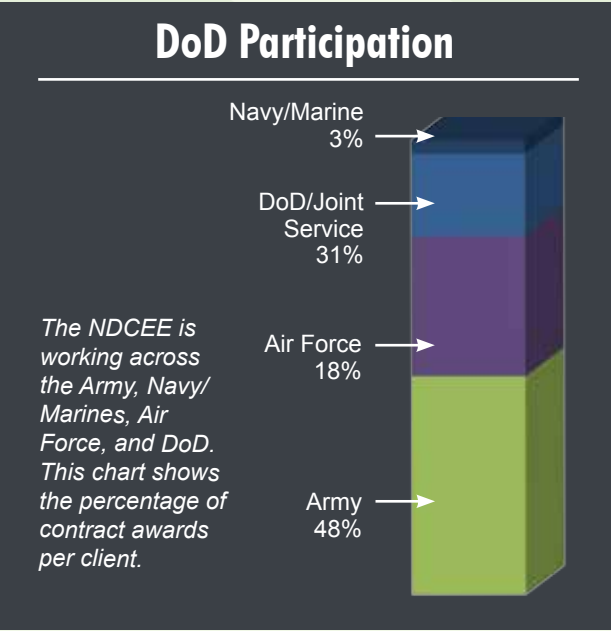
see the listing of collaborative relationships on page 21

Technology

47 technologies supported within the technology transition lifecycle in 2013, accomplishing

35 demonstrations/validations

11 transitions



Outreach

NDCEE outreach activities directly support technology transition by disseminating information on technologies to audiences within the DoD and across other federal agencies. Extending the base of knowledge is an important part of the NDCEE's mission.

deliverables

Averaging 80 client deliverables per month, the NDCEE maintained an average 99% on-time delivery. To ensure that pertinent technical information from NDCEE projects is widely shared, 361 deliverables were uploaded to the Defense Technical Information Center (DTIC).

publications

Capability Summary • 2012 Annual Report • FY12 Technologies Publication • Fall/Winter Newsletter • Task Descriptions • Technology Fact Sheets • Three articles featuring NDCEE accomplishments submitted to military and technical journals

conferences

exhibited and presented at 15 conferences

subject matter experts contributed 4 technical presentations and posters

MarCom Gold Award Winner

2012 Annual Report

www.ndcee.ctc.com

12,000 visits to the site per month, on average

2013 Technology Index



Advanced Robotic Laser Coating Removal System (ARLCRS)

Developed, demonstrated, and validated in an operational environment the use of a robotic laser system to remove coatings from aircraft. Transitioning in 2014, with annual savings over \$2.5M for F-16 and \$3.2M for C-130.



Benefits Realization Methodology (BRM)

Developed the BRM so the Army can reap modernization project-enabled benefits. The BRM was applied to 8 major projects and confirmed \$2.4M in annual benefits. The tool supports planning and technology incorporation to foster sustainability and readiness of DoD installations.



Air Force Enterprise Energy Management Framework Dashboard (AFEEFD)

Validated the AFEEFD for the USAF Energy Office. An interactive, web-based reporting tool, the AFEEFD enables oversight of the USAF energy strategic plan and energy management across the enterprise.



Biobased Products

Assisting DLA in identifying and validating biobased products in support of mission activities. In 2013, we conducted biobased technology demonstrations featuring 25 compostable food service ware items, 6 hydraulic fluids, and 4 two-cycle engine oils, leading to issuance of new National Stock Numbers.



Alertness Management in Military Operations (AMMO)

Developed a suite of fatigue-management tools used to identify potential fatigue (sleep loss) situations and reduce the risk of fatigue-related mishaps. Desktop applications have been in use since 2011, with a web-based version available in 2013.



Cadmium- and Hexavalent Chromium-Free Electrical Connectors

Tested 3 alternative coatings for electrical connectors to eliminate/reduce cadmium and hexavalent chromium usage in ground systems, such as Stryker vehicles. Outdoor exposure testing was conducted at CCAFS. Additional testing will occur in 2014.



Army Renewable Energy Strategy

Supported the Army's Energy Initiatives Task Force (EITF) by demonstrating a collaborative business approach to leverage private sector investments for large-scale energy projects. Today, successful transition of this approach has increased effectiveness in this complex area.



Consolidated Environmental Resource Database Information Process (CERDIP)

Developing a GIS database to display cultural and natural resources in 5 African countries. CERDIP will provide USARAF military planners with improved situational awareness for protecting these important sites.



Corrosion Under Paint (CUP) Test Standards

Fabricated and applied test standards to facilitate the greater use of non-destructive testing (NDT) technologies. These standards could be applied to any military asset that suffers from corrosion and is or could be inspected using NDT techniques.



Defense Occupational and Environmental Health Readiness System (DOEHRS)

Developed and tested a surveying and data management model to address standardization challenges and improve the quality and quantity of IH data in DOEHRS, DoD's information management system for archiving workplace exposure information.



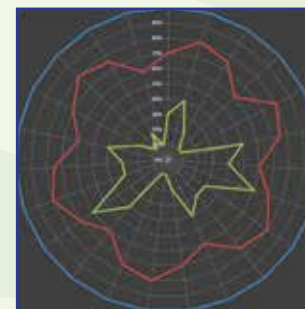
Demil Enterprise Strategic Planning Procedural Guide

Documenting a standardized process for PM DEMIL that prioritizes requirements to reduce the demilitarization (demil) stockpile. The process incorporates current and future capabilities to make recommendations based on business case analysis of technologies.



Deployable Waste-to-Energy (WTE) Systems

Evaluated the ability of a small-scale WTE system to generate electrical power while processing mixed waste streams typically found on a contingency base. The commercial technology worked as advertised, but requires some developmental changes before theater deployment.



Economic Input-Output Life-Cycle Assessment (EIO-LCA) Tool

Developed and demonstrated the EIO-LCA tool, which monetizes ESOH impacts of candidate weapons systems, equipment, and platforms. The model is an adaption of a commercial tool to fit specific defense acquisition requirements.



Electronic Voluntary Protection Programs (e-VPP) Tool

Continued enhancement, support, and application of the e-VPP Tool to streamline data gathering and application submittal for military sites pursuing OSHA's Voluntary Protection Programs (VPP) Star Status. More than 400 sites and 5,000 users are using the tool.



Emission Factor Data Collection Tool

Demonstrating an NDCEE tool as part of ongoing emissions factors research being executed under SERDP. This tool will help the DoD to obtain and analyze high-quality data associated with performing specific demilitarization activities.



Energy Awareness Training

Developed and delivered energy awareness training modules to support achieving the USAF's vision to make energy a consideration in everything that it does. This web-based training is made available via the USAF's Advanced Distributed Learning Service (ADLS).



Energy Security Assessment (ESA) and Mission Critical Utility Infrastructure - Conceptual Designs (MCUI-CD)

Developed a standardized tool and design template to identify energy risks, prioritize mitigation solutions, and design a self-sustaining electrical power infrastructure; vital for serving mission critical loads. Three site demonstrations began in 2013.



Enterprise Safety Applications Management System (ESAMS)

Continued enhancing ESAMS to find safety process improvement opportunities for military and civilian personnel. This web-based tool standardizes the management of safety data collection, distribution, and retention to meet federal and DoD requirements.



Facility and Process Improvements for Infantry Combat Equipment

Designed, demonstrated, and implemented improved storage and cleaning/drying systems, while controlling the storage environment. The results were reduced costs and reset time, ensuring serviced combat equipment is available to Marines.



Filtration and Disinfection Methods

Identified disinfection technologies and grey water regulatory requirements for a laundry wastewater filtration and recycling system to be installed at CLDJ. With use of an NDCEE test plan, the Navy will conduct demonstration testing at Port Hueneme and CLDJ in 2014.



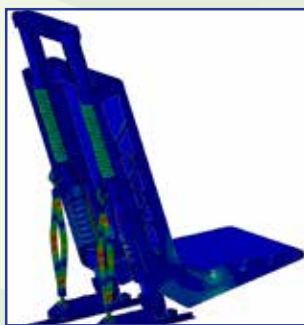
Forward Looking Infrared (FLIR) Hand Control Unit (HCU)

Designed and developed a FLIR HCU adapter plate and drill guide tooling for improving the sustainability and mission availability of the MH-60R helicopter. Validation testing will occur in 2014 at Cherry Point ISSC.



Gasket Kit for Nose Bay Avionics Shelves

Developed a gasket kit that provides corrosion prevention to nose bay avionics while allowing electrical conductivity. The kit significantly inhibits corrosion while reducing total ownership costs of the MH-60R, a maritime multi-mission helicopter.



Ground Vehicle Energy Absorbing Seat

Worked with TARDEC to design, develop, and demonstrate an innovative seat system for military vehicles to protect occupants from blast effects. The seat maximizes soldier comfort and provides protection during a blast event. The system is in the test phase.



Ground Vehicle Event Data Recorder (VEDR)

Developing a "black box" to record sensor data that will be used to improve vehicle safety. Engineers will be able to reconstruct vehicle roll-over and blast/IED events to better understand the causes of crew injury and facilitate a safer vehicle design.



Handheld Laser for Coatings Removal

Developed and demonstrated in an operational environment the use of handheld laser coatings removal technology for off and on-aircraft component processes used on small and large aircraft at ALCs. Technology will be transitioned in conjunction with the ARLCRS.



Heat Pump Water Heaters

Investigating the feasibility of these units to reduce expeditionary base energy needs. Torrid climates, such as CLDJ's, are optimal for this technology as it uses heat naturally present in the surrounding air to heat water. A demonstration at the Camp's laundry and ablution facilities will occur in 2014.



Hybrid Solar Photovoltaic-Thermal Technologies

Produced a 3D model and conducted thermal simulations to characterize a maintenance shop's heating requirements. A solar-geothermal heat pump system was identified for PAARNG that could eliminate propane usage and reduce energy use and heating costs by over 50%.



Hydraulic Fluid Purification (HFP) Systems

Identified and engaged stakeholders to develop a Joint Service performance specification that will standardize HFP system performance requirements for purifying aircraft hydraulic fluids. All DoD Services, DLA Aviation and HFP system manufacturers provided input.



Incinerators for Solid Waste Reduction

Conducted a one-month demonstration on two mobile incinerators. They were returned to PM FSS for further testing and evaluation for theater applications. This partnering allowed us to be directly responsive to deployment needs.



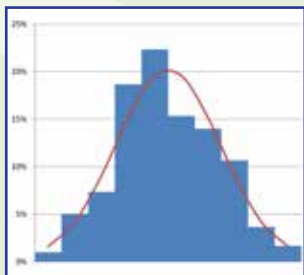
Industrial Hygiene (IH) Companion

Created and demonstrated a mobile app for collecting IH data in the field, demonstrating doubling of collection productivity. The tool streamlines the process of conducting noise and ventilation surveys and assists with easy data entry into DOEHS.



Innovative Tooling to Solve H-60 Maintenance Issues

Developed tools to improve maintaining the H-60 aircraft. These tools remove the forward bridge tie rods and the forward bridge eccentric bushings, which are particularly susceptible to maintenance-induced damage during corrosion inspection.



Intellectual Property (IP) Valuation Tool

Developed and used an IP valuation tool to quantify the IP value at a government-owned, contractor-operated (GOCO) facility. Results provided the basis for government negotiators to obtain the best value for the government in ammunition production and procurement.



In-Vessel Composting

Transitioned to JBMHH after demonstration and validation testing of the self-contained unit. Test scenarios were built around JBMHH need to address horse manure and food waste as well as a contingency base need to address food waste and other biodegradable waste.



Lead-Free Plating Robber

Demonstrated a down-selected product at Navy and Army plating shops to ensure ease of use as well as continued compatibility with their plating baths. Additional demonstrations are planned. The current robbing technology is used during refurbishing of weapon systems components.



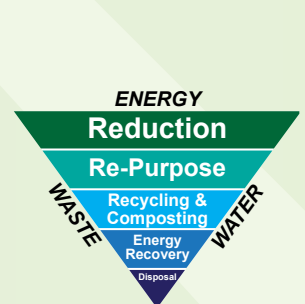
Mobile Wastewater Treatment

Conducted a 3-month demonstration at FLW of an energy-efficient, mobile and scalable unit that enables contingency bases to meet environmental requirements. The technology shows potential for temporary locations with minimal land for lagoon construction.



Munitions Primer Sealant Alternatives

Identified and validated 3 ultraviolet, non-toxic formulations as alternatives to "purple lacquer," a primer sealant containing hazardous air pollutants and used in munitions production. Use of an alternative could reduce material and operating costs by almost 50%.



Net Zero Methodology

Developed and tested a methodology that serves as a template on how to plan, implement, and monitor installation success in meeting the Army's Net Zero Installation goals. Additionally, the NDCEE has produced Net Zero energy and water security assessments, a waste roadmap, and an integrated energy, water, and waste roadmap.



Net Zero Waste Assessment Methods

Developed a set of analysis tools providing a systems-based perspective for understanding waste generation and diversion within activities across a base. The NDCEE demonstrated these tools at 5 Army Net Zero pilot sites. Findings help bases prioritize initiatives.



Non-Destructive Testing (NDT) Techniques for Detection of Corrosion under Paint (CUP)

Demonstrated the ability of 4 NDT techniques to detect, at varying degrees, corrosion found on aircraft airframes. With NDT, costly, unneeded repairs and repainting can be avoided, without compromising safety.



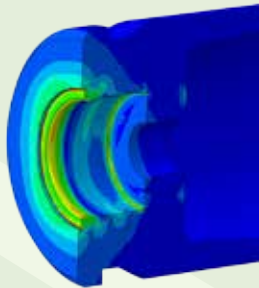
Safety and Health Management Systems Training

Developed and transitioned training programs to advance the WHS Safety and Health Management System (S&HMS). For example, the NDCEE produced a contractor safety orientation video. In addition, the NDCEE routinely conducted safety training at WHS.



Photovoltaic (PV) Arrays

Demonstrated and validated a PV system converting sunlight into electricity at Camp Katuu, Palau, a remote island requiring fossil fuel shipments for electricity generation. Testing and technology transition was in coordination with Pacific Command and A/249th Engineering Battalion.



Small Caliber Ammunition Process Improvements

Identified, developed, and tested several process and quality of work improvements for ammunition plants. Improvements included a quicker and more accurate defects identification test as well as tool and case redesigns, leading to higher quality ammunition.



Production Base Support Database

Completed and transitioned to PD JS. The Industrial Base staff will utilize and populate the database on a regular basis for reporting functions and better management of the more than 200 Industrial Base modernization projects.



Storm Water Management Pilot Approach

Assisted 12 DoD facilities in the Chesapeake Bay Watershed with reducing pollutant runoff. Depending on the base, the NDCEE determined baseline pollutant loads, developed Federal Facility Implementation Plans, and evaluated BMPs.



Quality of Work Environment (QWE) Mobile Application Tool

Developed a "live" field tool for evaluating QWE related to safety, health, and facility requirements. The NDCEE provided support to government field teams as they conducted QWE baseline assessments at 18 Army industrial facilities using the transitioned tool.



Renewable Energy Suite (RES)

Developed, designed, and assembled RES to power site loads. We tested the RES on refrigerated loads at a SOUTHCOM dining facility in El Salvador. The RES produces and stores electricity, imports/exports energy to an electrical grid, and produces syngas to decrease fuel consumption by electrical generators.



Undersea Unexploded Ordnance (UXO) Characterization

Aided the DoD in developing methods and techniques for identifying UXO and associated safety hazards to fishermen in U.S. coastal waters. Activities included evaluating the fate and transport of arsenic, originating from sea-disposed munitions.

Collaborative Relationships

Collaborative relationships are an integral component of the NDCEE's success at identifying, demonstrating, validating, and implementing solutions for clients. From the onset of each task, the NDCEE works closely with stakeholders to understand their unique concerns, challenges, and needs. Wherever appropriate, the NDCEE also collaborates with other entities in the quest for a cost-effective, technically-viable solution that is most appropriate for each client. The NDCEE works with a wide variety of organizations and programs within the DoD. In 2013, the NDCEE worked with the following organizations and programs within the DoD and elsewhere.

Aberdeen Proving Ground (APG), MD

Aerosafe Risk Management

Air Force 18th Air Support Operations Group (18 ASOG)

Air Force Civil Engineer (AF/A7C)

Air Force Materiel Command (AFMC)

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Defense Logistics Agency (DLA)

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DLA Distribution Oklahoma City, OK
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