DoD Executive Agent

Office of the Assistant Secretary of the Army (Installations and Environment)

NDCEE

National Defense Center for Environmental Excellence

Operated by:

CTC Concurrent Technologies Corporation

Transferring Technology Solutions -

Matching Army Installation Sustainability Needs With Technology Solutions

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Supporting Readiness, Sustainability, and Transformation

Acknowledgements

- **NDCEE Executive Agent** — Mr. Tad Davis, DASA (ESOH)
- **NDCEE Program Director** — Mr. James Dries, ODASA (ESOH)
- **NDCEE Program Manager** — Dr. Charles Lechner, ODASA (ESOH)
- **Government Technical Monitors** — Mr. Mark Hampton, USAEC; Mr. Thomas Guinivan, USAEC

Presentation Highlights

- NDCEE & Army EQT partnership
- Task accomplishments
  - Identified and validated 37 needs at six installations
  - Informed installation staffs about solutions
  - Shared installations' best practices
  - Helped installations to meet their sustainability goals
- Collaborative and follow-on NDCEE efforts
- Lessons learned

Army EQT & NDCEE Programs

- Established in 1991, the NDCEE serves as a national resource to address high-priority environmental issues for the DoD and other government organizations.
- The Army's EQT Program provides guidance and direction to the U.S. Army's environmental community by focusing on science, technology, and demonstration and validation work to satisfy user requirements.
- Program goals are to implement and transfer cost-effective technologies, methods, and processes to the field.

NDCEE Task N.0412, Technology Transfer

- Goal: To match current installation needs with technology solutions and help execute technology transfer and implementation.
- Objective: Initiate technology transfer on site
  - Leverage technology assessments developed on four key technology transfer focus areas
  - Identify candidate application sites with needs in those focus areas
  - Confirm and define end-user needs through site visits
    - Capture success stories and lessons learned
  - Consolidate site findings and perform data analysis

Technology Focus Areas

- HAPs/VOCs from combustion sources
- Surface coating operations
- Lead-based paint removal
- Solid waste reduction

Why Use Focus Areas?

- Prioritize and select sites
- Initiate needs identification
  - Discuss potential technology solutions with installation personnel while on site
- Facilitate planning for the site visit
  - Identify process areas/points of contact
- Organize our visit teams
  - Offer complementing technical expertise tailored to the site's needs

NDCEE Technology Assessments

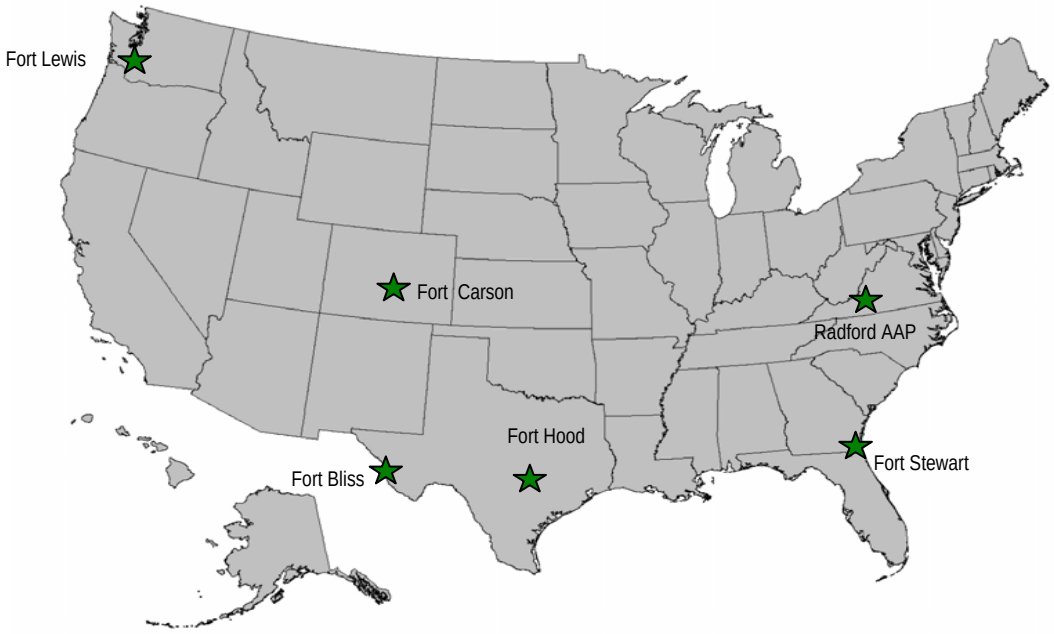
- Overview of technologies that are available in the marketplace or in development:
  - Technology descriptions
  - Maturity level
  - Vendor information
  - Cost information
  - Performance data
  - Demonstration/validation needs
  - Applicability to EQT exit criteria
- Technology Inventory: 131 solutions
  - HAPs/VOCs, non-paint operations = 46
  - HAPs/VOCs, paint operations = 27
  - LBP = 25
  - Solid waste = 33

Site Selection

- Reviewed Environmental Program Requirements (EPR) Database
  - Designed to support execution of environmental projects
  - Maintained by USAEC
  - Identified project requests as need statements for technology transfer opportunities
  - Lessons learned:
    - EPR search results provided credibility, interest to installation staff
    - EPR-identified needs were a good starting point, representing about half of the site's needs

Site Selection

- Identified key candidate application sites
  - Fort Bliss, TX
  - Fort Carson, CO
  - Fort Hood, TX
  - Fort Lewis, WA
  - Fort Stewart, GA
  - Radford AAP, VA



Technology Transfer Visits

- Obtained approval and coordinated activities with REOs/IMA Regional Offices
- Continued need-identification activities prior to visits
  - Initiated discussions with installation personnel
  - Reviewed findings contained in Environmental Performance Assessment Reports (EPARs)
  - Reviewed 25-year sustainability goals
- Conducted visits in January-April 2005
  - Team members included USAEC and NDCEE representatives with applicable technical expertise

On-Site Technology Transfer Objectives

- Gain a better understanding of installations' environmental challenges
- Capture success stories and lessons learned
- Provide installations with information on commercially available technology solutions
- Gather more specific data related to a potential solution
  - Equipment installation, operation, training, long-term maintenance
- Work with installation personnel who can implement changes
- Follow-up with:
  - Trip Reports including product information & POCs
  - Technology Transfer Implementation Plans (2 sites)

Analysis Findings

- Installation needs: 37
- Installation successes: 27
- Technology solutions: 86
  - Sustainability goal related: 6
  - NDCEE investigated: 14
  - Army investigated: 7

Solutions For Common Needs

Technology Need	Potential Solutions
■ VOC and HAP reduction in painting operations – Fort Lewis – Fort Bliss – Fort Carson – Fort Stewart	■ Water-dispersible chemical agent resistant coating (WD-CARC) ■ High-efficiency spray guns ■ Paint distribution system ■ Paint application targeting device ■ In-line paint fluid monitoring

Solutions For Common Needs (cont.)

Technology Need	Potential Solutions
■ VOC reduction in parts washing and TRI chemical use reduction in brake cleaning operations – Fort Lewis – Fort Bliss	■ Non-naphtha-based solvent parts washer ■ Aqueous brake cleaner
■ Alternative fuel implementation – Fort Hood – Fort Stewart – RFAAP	■ Biodiesel

Solutions For Site-Specific Needs

Technology Need	Potential Solutions
■ LBP detection for compliance reporting	■ X-ray fluorescence analyzer
■ Reduction of wastewater from tanker truck washing	■ Closed-loop tank washing system
■ LBP removal from deconstructed wood	■ Wood recovery unit
■ Improved, compliant vehicle decoating process	■ Vacuum-assisted grinding equipment
■ DLSME NESHAP compliance of paint booth	■ Paint booth replacement/ retrofitting
■ NESHAP compliance of wood-fired boiler	■ Combustion modification

Installation Success Stories

- **Potential solutions for other installations**
  - Validated technologies
  - Technical and cost-benefit support data
  - Lessons learned
  - Priority interest of other installation staff
- **Capitalized on NDCEE experience**
  - Demonstration/validation and technology transfer efforts with all of the Services
  - Site visit findings that have been captured under other NDCEE tasks

Installation Success Stories

- Fort Campbell: Concertina wire disposal, deconstruction
- Fort Chaffey: Wood recovery system
- Fort Hood: Tanker truck washing facility, solvent distillation system
- Fort Leonard Wood: Biodiesel
- Malmstrom AFB: Stage II vapor recovery systems
- NADEP Jacksonville: Paint proportioning system
- NAS Whidbey Island: In-vessel composting system
- RFAAP: Hydroturbine technology (renewable energy)
- RFAAP and Tobyhanna Army Depot: Environmental Management and Monitoring System (RFAAP's system has security camera features)

Sustainability Goal-Related Solutions

Sustainability Goal	Installation(s)
■ HAP reduction in painting operations	■ Forts Carson, Hood, and Lewis
■ HAP reduction in non-paint operations (e.g., solvent reduction from parts washing)	■ Forts Carson and Hood
■ Waste minimization associated with construction, deconstruction, and renovation projects	■ Fort Hood

Sustainability Goal-Related Solutions

Sustainability Goal	Installation(s)
■ Solid waste reduction (including composting and recycling program expansions)	■ Forts Carson, Lewis, and Hood
■ Grey water reuse	■ Fort Lewis
■ Energy from renewable sources	■ Forts Carson, Hood, and Lewis

NDCEE-Investigated Solutions

- Aqueous cleaning
- Environmental Management and Monitoring System
- Fuel cells
- High-efficiency spray equipment
- Hydroturbine technology
- Joint Service Solvent Substitution Tracking Database
- Lactate esters cleaning process
- Paint application targeting device
- Paint distribution systems
- Plastic media blasting
- Releasable corrosion inhibitor product
- WD-CARC
- Water treatment system
- Wood recovery unit

WD-CARC is being sprayed during a NDCEE demonstration at CEG-A, Goose Creek. Following the demonstration, WD-CARC was implemented at the facility.

Army-Investigated Solutions

- Bio·airVENT® [Activated Carbon Fiber-Cloth (ACFC) Adsorber and Vapor Recovery System]
- Decontamination Furnace
- Green Waste Composting
- Lithium Battery Recovery and Reuse Program
- Rotating Drum Biofilter
- Sludge Composting
- WD-CARC

USAEC sponsored a demonstration of a decontamination furnace at the Alabama Army Ammunition Plant. The system can achieve 99.999% decontamination of explosives-contaminated materials.

NDCEE Follow-On Efforts

- Additional site visits – up to 10 Army sites
  - Investigate other focus areas
  - Expand validation effort of installation needs
  - Provide demonstration/validation support for implementation
- Additional technology assessments
  - Industrial cleaning, alternative fuels/energy management, and water conservation/recycling
- Demonstrations
  - WD-CARC: Fort Lewis, March 7-9, 2006
  - Composting: Fort Hood, Fort Lewis
  - 2 others TBD

Lessons Learned

- On-site validation is important in updating our knowledge of installation needs
  - Existing databases give only a partial overview of installation environmental needs
  - Currency was more important than expected
- Most installation needs can be met with available technologies
  - Technology demonstration/validation is often necessary for implementation
  - Monetary and other constraints may constrict installations' ability to implement cost-saving solutions

Summary

- Through the technology transfer visits, the Army and NDCEE are able to:
  - Validate installations' high-priority environmental needs (and identify new ones)
  - Discuss past, current, and future actions and plans with installation personnel
  - Discover common needs among Army installations
  - Match needs with solutions
  - Uncover needs that lack commercially available solutions
  - Provide installations with recommendations and plans for technology implementation
  - Help installations to meet the "sustainability" goal from the *Army Strategy for the Environment*

Points of Contact

- For additional information, please contact:

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Questions?