



DEFENSE LOGISTICS AGENCY

AMERICA'S COMBAT LOGISTICS SUPPORT AGENCY



Supply Chain Focused Research and Development

DLA Industry Conference & Exhibition

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June 30, 2011



Agenda

- **DLA Supply Chains and R&D Overview**
- **President's Budget Programs**
 - **Industrial Preparedness (ManTech)**
 - **Logistics R&D Technology Demonstrations**
 - **Small Business Innovation Research**
- **Discussion & Questions**



Global Supply Chains

Troop Support

- **Class I: Subsistence**
 - Food Service
 - Produce
 - Operational Rations
- **Class II: Clothing & Textile**
 - Recruit Clothing
 - Organizational Clothing & Individual Equipment
- **Class IV/VII: Construction & Equipment**
 - Facilities Maintenance
 - Equipment
 - Wood Products
 - Safety & Rescue Equipment
- **Class VIII: Medical**
 - Pharmaceutical
 - Medical/Surgical Equipment



Aviation

- **Class IX:**
 - Engine Components, Air Frames
 - Flight Safety Equipment, Maps
 - Environmental Products

Land and Maritime

- **Class IX: Maritime**
 - Valves, Fluid Handling
 - Electrical/Electronics
 - Motors, Packing/Gaskets
- **Class IX: Land**
 - Wheeled, Tracked & Heavy Vehicle Parts
 - Vehicle Maintenance Kits
 - Power Transmission/Engine/Suspension Components
 - Tires, Batteries and Small Arms Parts

Energy

- **Class III: Energy**
 - DoD Executive Agent for all Bulk Petroleum
 - Natural Gas, Coal, Electricity
 - Aerospace Energy

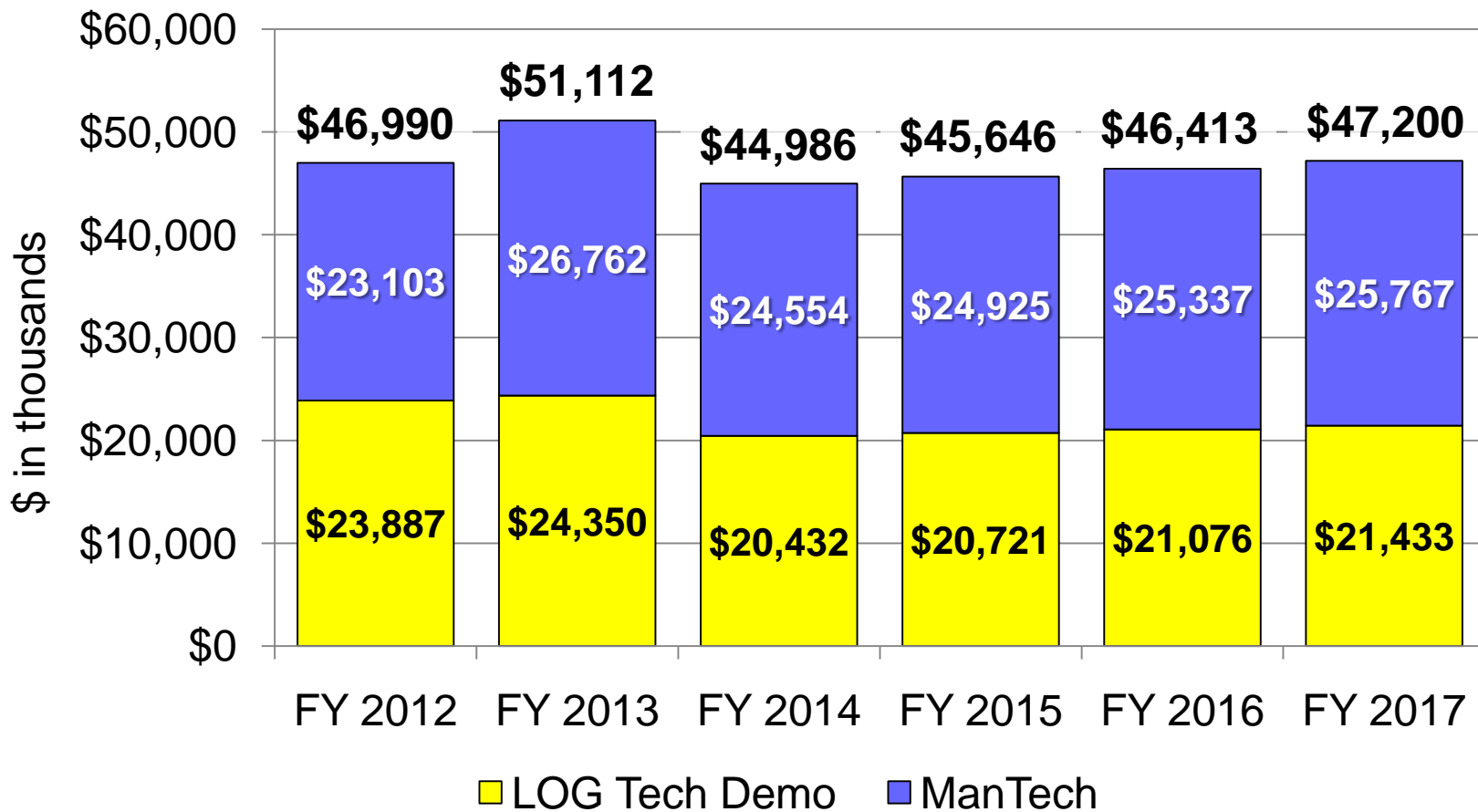


DLA Logistics Research and Development Program

- The goal of the DLA R&D Program is to identify and develop advanced technologies to better support the warfighter
- R&D is aligned to Supply Chains and Service activities to encourage and enable implementation
- A governance structure is in place, engaging senior DLA leaders in sponsoring R&D projects and managing the program
- Each Supply Chain has a portfolio of R&D Projects - there are 80-100 ongoing projects overall



DLA R&D Funding FY 12 – FY 17





FY 11 President's Budget Logistics R&D Portfolio

| Subsistence | Clothing & Textiles | Medical | Energy | Const / Equip | Maritime | Land | Aviation |
|---|--|---|----------------------------------|---|----------|------|----------|
| Combat Rations Network \$1.9 | Customer Driven Uniform Mfg. \$4.2 | Medical Logistics Network \$2.8 | Energy Readiness \$2.2 | Castings \$2.6 | | | |
| | | | | Forgings \$1.2 | | | |
| | Tent Network \$1.0 | | | Weapon System Sustainment \$5.6 | | | |
| | | | | Microcircuit Emulation \$10.8 | | | |
| | | | | Battery Network \$1.0 | | | |
| Supply Chain Enablers | | | | | | | |
| Supply Chain Management \$3.0 | | | | | | | |
| Strategic Distribution and Reutilization \$3.6 | | | | | | | |
| Defense Logistics Information Research \$2.3 | | | | | | | |
| 0708011S - Industrial Preparedness (ManTech) | | | | 0603712S - Logistics R&D Tech Demo | | | |
| Small Business Innovation Research (\$TBD) | | | | | | | |



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Material Acquisition - Electronics

R&D Challenge:

- Microcircuit commercial life cycle is 18 months
- Military life cycle can be decades
- Emerging obsolescence in Linear Microcircuits

Objective:

- Develop a sustainable capability to design and produce MIL-qualified form, fit, function microcircuits in **U.S.** based unified manufacturing process



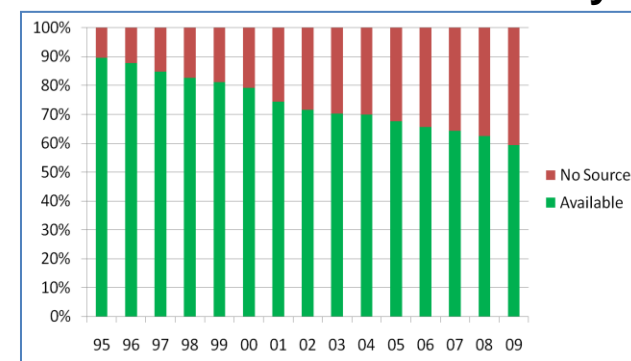
Accomplishments:

- 100,000 parts in 350 different systems – \$700M cost avoidance
- Zero failures
- Supporting parts from over a dozen different former sources
- Technology “feeder” to the Generalized Emulation of Microcircuits (GEM) Program

Plan:

- Develop increasingly higher performance Digital microcircuit emulation capability
- Begin developing Linear microcircuit emulation capability to address emerging requirements
- Ensure sustainability of existing and planned capabilities

Linear MILSPEC Availability





Advanced Casting Technology (PRO-ACT)

R&D Challenges:

- Castings are a disproportionate share of unfilled orders
- Fragile supply chains – hidden sole sources

Objectives:

- Improve responses to solicitations
- Improve casting manufacturing technology

Accomplishments:

- 4,339 solicitations, valued at \$60M, matched to existing casting tooling records. Total number of foundries listed in the casting supplier database is currently 291
- Published guidelines to select filler metals & welding parameters to reduce corrosion in steel castings
- Developed digital radiography acceptance standard to quantify performance of steel castings
 - Eliminated use and storage of x-ray film

Plans:

- Developed digital radiography standard for thin section steel castings
- Complete industrial trials to validate simulation software that predicts performance of steel castings
- Complete testing of beryllium-free cast aluminum alloy for incorporation into Metallic Materials Properties Development and Standardization Handbook





Forging Advanced System Technology (PRO-FAST)

R&D Challenges:

- Forgings are a disproportionate share of unfilled orders
- Fragile supply chains – hidden sole sources

Objectives:

- Improve responses to solicitations
- Improve forging manufacturing technology



Accomplishments:

- Tooling database with 62,000 part numbers or National Stock Numbers
- Refined the new software for Lean Manufacturing capabilities at forge shops
- Addressed over 170 unique assistance requests for sourcing or tooling with an estimated savings of \$900K

Plans:

- Metal and Process Optimization project to evaluate production methods and materials as a decision making guide
- Implement an alpha version of Lean Manufacturing software for forge shops



Combat Rations Network (CORANET)

R&D Challenges:

- Quality rations in varied environments
- Surge requirements

Objectives:

- Improve quality of rations through process, packaging, and formulation improvements through collaborative research
- Improve producibility of rations by introducing enhanced or new production equipment design with likelihood of transition to industry



Accomplishments:

- Wet pack fruit improvement by using fresh fruit vs. re-packaging canned fruit
- Non-destructive seal tester saves >\$700K annually in destroyed group tray rations
- Ultrasonic sealing technology estimated to save >\$300K annually in destroyed and reworked ration pouches that result from traditional heat seal technology
- Extended Shelf Life Shell Eggs packaging design completed

Plans:

- Meal, Ready-to-Eat (MRE) assembly improvement
- Transition Extended Shelf Life Shell Eggs technology to industry
- Improve MRE packaging



Battery Network (BATTNET)

R&D Challenge:

- Leverage advanced technologies to benefit DoD battery logistics

Objectives:

- Develop manufacturing solutions for critical mobilization requirements, lower DoD battery costs, address material shortage issues, improve domestic battery manufacturing and surge capabilities, and streamline logistics practices by mobilizing industry partnerships and implementing best practices

Accomplishments:

- Program established in 2010 with DoD battery community of technical experts and industry partners
- Three projects approved for 2011 improving manufacturing processes and lowering costs of critical military lithium-ion rechargeable batteries

Plan:

- Award additional short term projects in 2012 that have been reviewed by the Power Sources Technical Working Group. Identify and develop alternatives for older carbon-zinc and nickel-cadmium batteries in DLA supply chain





Customer Driven Uniform Manufacturing (CDUM)

R&D Challenge:

- Clothing and Individual Equipment
 - Unique and proprietary materials
 - Military-unique design,
 - Limited industrial base

Objectives:

- Supply Chain Process Reengineering and Advanced Technology for Military Clothing
- Manufacturing Methods for Product Performance and Quality Improvement
- Shared asset visibility and Central Issue Facility Process Re-engineering

Accomplishments:

- Successful demonstration of supply-chain wide, integrated Radio Frequency Identification (RFID) technology at pallet, case and *item*
 - Inventory discrepancies reduced from 4.9% to 0.2%
- Fabric color measurement technology development

Plans:

- Streamlined processes for item level RFID at Clothing and Textile manufacturers' facilities
- Automated fabric shade development and evaluation
- C&T technical data package data integration and communication to manufacturers





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Strategic Distribution & Reutilization

R&D Challenge:

Legacy capabilities inadequate for emerging worldwide distribution, disposition, reutilization, and retrograde requirements

Objective:

Warfighter Support Enhancement and Stewardship Excellence tools for DLA's global military and humanitarian-support operations by technology insertion and doctrine updates

Accomplishments:

- DLA Distribution Expeditionary deployed to Afghanistan summer 2010
- Node Management fielded as Afghanistan Logistics Common Operating Picture
- Humanitarian asset-visibility systems developed for worldwide disaster relief missions
- DLA Disposition Services Simulation Lab established for R&D and Workforce Development
- Multiple follow-on R&D projects initiated to build on past successes

Plans:

- Stock Positioning Extended—right material, right place, right time for expeditionary ops
- Humanitarian Expeditionary Logistics Program—coordination of disaster relief ops
- Analyze, develop, and demonstrate improved transportation and packaging capabilities
- Improve DLA Disposition Services through exploration of process advancements, life-cycle integration, and simulation laboratory experimentation





Weapon System Sustainment

R&D Challenge:

Technology & analysis for improvements to logistics processes

Objectives:

- Inventory management optimization
- Technical/Quality process improvement

Accomplishments:

- Peak policy pilot for infrequently demanded items
 - Reductions in Purchase Requests and Customer Wait Time; investment held constant
- Analysis of backorder reduction via tech data package scrubbing
 - 33% lead-time reduction; 36% fewer aged backorders
- Product quality deficiency analysis tool
 - Quicker identification of systemic quality issues with items or suppliers

Plans:

- Pilot advanced management of frequently demanded items
 - 50% inventory investment reduction; 20% reduction in procurement actions
 - No sacrifice in customer service
- Demonstrate technology solutions to battle counterfeit part entry in supply chain
- Pilot advanced tools and processes to efficiently identify bad actor suppliers





Defense Logistics Information Research

R&D Challenge:

- Automated capture of commercial and engineering data into the Federal Logistics Information System

Objective:

- Improve the quality, speed, and cost of logistics data acquisition and management



Accomplishment:

- Model Based Enterprise pilots with USAF A-10 to use 3D, model based logistical data.
- Parametric search tools are beginning transition to production system.
- Development and sustainment of Commercial Master Data File is being adopted by DLA Logistics Information Service in support of parts management function

Plans:

- Provide tools to military activities via DoD Engineering Drawing & Modeling Group
- Initiate projects in technical data mining



Supply Chain Management

R&D Challenge:

- Urgent requirements arise between budget cycles

Objective:

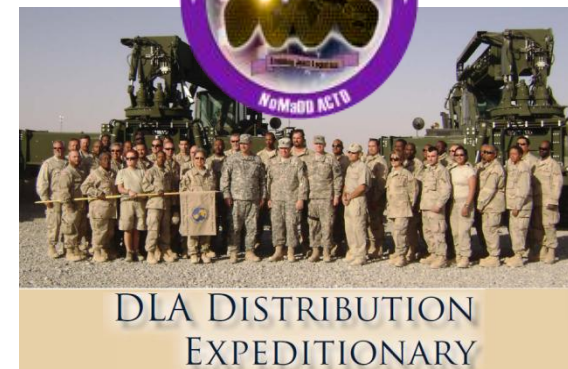
- Quickly address opportunities and problems
- Fund until next budget cycle

Accomplishments:

- Started NoMaDD – DLA's first Advanced Concept Technology Demonstration – that validated DLA Distribution Expeditionary
- Started the Standard Unit Price (SUP) evaluation project that benefited Defense Working Capital Fund by \$20 million and improved part management for MRAP and LCAC.
- Jumpstarted – DNA Part Marking, First Destination Transportation/Packaging Initiative, Industrial Base Exchange 2 and Strategic Material Management System

Plans:

- Support residual requirements from the TENTNET Program
- Transition SUP and MRAP projects to DLA and Army Operations & Maintenance funding, respectively
- Emerging requirements for Network Centric Manufacturing





Energy Readiness

R&D Challenges:

- Petroleum Supply Chain
 - Rapidly address emergent product issues
 - Explore new technologies and processes
- Emerging energy solutions
 - Demonstration, test & certification of alternative fuels
 - Explore technologies to reduce energy logistics footprint and environmental impact



Objectives:

- Improve Class IIIB supply chain (products, processes, infrastructure)
- Position DLA to support future alternative fuel requirement
- Explore alternative energy solutions

Accomplishments:

- Alternative Fuel Engine Test Project – Successful engine testing of synthetic fuels
- Cold weather additives for biodiesel – Identified most effective commercial additives to improve low temperature properties of biodiesel blends
- FY10 National Defense Authorization Act Section 334 Congressionally Study – Provided comprehensive review of current and projected capabilities in the alternative fuel industry, and feasibility analysis of integrating alternative fuel into the DoD supply chain;

Plans:

- Supply chain improvement – product, infrastructure, processes
- Partner with Military Services – alternative fuels



Medical Logistics Network

R&D Challenge:

- Improve labor-intensive, manual, and sub-optimal medical logistics business processes

Objective:

- Create innovative software and business solutions to improve commercially based Medical supply chain operations

Accomplishments:

- Developed web service infrastructure & pilots to enhance Enterprise data-sharing
- Developed new passive packaging concepts for temperature-sensitive materiel over all required temperature ranges
- Developed common business processes and defined the transition plans driving evolution to the Defense Medical Logistics Enterprise. The architecture links relevant national capabilities to global medical operations in concert with broad transformation initiatives in DoD, including the Net-Centric Joint Functional Concept and Joint Force Health Protection Transformation.

Plans:

- Mature web service development, integrate with data sources, and deploy for users as part of new \$5B prime vendor contract
- Eliminate three major manual business processes and move to IT-based automated approach





Tent Network (TENTNET)

R&D Challenges:

- Difficulties in meeting surge requirements
- Lack of standardization
- Antiquated manufacturing technologies

Objective:

- Improve capability of tent supply chain through government/industry/academic collaboration



Accomplishments

- Developed a simulation tool to optimize inventory investments for improved surge
 - Currently in transition phase
- Developed automated manufacturing module to increase surge capability
 - Currently testing on production floor

Plans:

- Increase ordering of MILSPEC tents by improving e-commerce capability
- Expand capability of simulation tool to other supply chains



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Small Business Innovation Research (SBIR)

R&D Challenge:

- Advanced manufacturing processes

Objective:

- Lower cost spares for older weapon systems

Accomplishments (since FY 07)

- 26 Phase I Contracts awarded + 7 pending
- 8 Phase II Contracts awarded + 1 pending

Plans:

- Continued focus on manufacturing
- Award 6-8 Phase I contracts
- Award 2 Phase II contracts

Materials Innovation
TECHNOLOGIES

MODUMETAL

Nanometrics

THIRD WAVE SYSTEMS
2 awards

Elka Precision

imaginestics

SMRC
SYSTEMS & MATERIALS RESEARCH CORPORATION
Pending award

Advanced Powder Solutions, Inc.
www.apowders.com



Discussion & Questions

What R&D ideas do you have to help your company support DLA's supply chains and strategic goals?

- Warfighter Support Enhancement
- Stewardship Excellence
- Workforce Development.

Stop by the DLA R&D exhibits.

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