“Amateurs talk about strategy;
Professionals talk about logistics.”

former General R.H. Barrows
Commandant, USMC
Our History

- Unparalleled industrial capabilities
- Highly trained and motivated workforce
- First fully automated logistics system
- Envied by our allies; Feared by our adversaries
Post Cold War

- 60-day response time
- 42 Maintenance Depots
- 788M cubic feet of storage space

- $67B in inventory
- 32-day response time
- 20 Maintenance Depots
- 323M cubic feet of storage space

Ready to Project and Sustain a Smaller “Cold War”
The Changing Game

• Immediately Employable Force Option
• Preemptive Capability
• Net-Centric Warfare
• Focused Joint Logistics
Words of Wisdom

“The dogmas of the quiet past are inadequate to the stormy present. . . As our case is new, so we must think anew, and act anew. We must disenthralll ourselves, and then we shall save our country.”
Logistics Implications (QDR Direction)

- Project and sustain the force with minimal footprint
- Implement performance-based logistics to improve readiness for major weapon systems and availability of commodities
- Reduce cycle times to industry standards
Our Complex Web

Quadrennial Defense Review
- Project and sustain the force with minimal footprint
- Implement performance-based logistics
- Achieve industry performance standards

Combatant Commanders
- Integrated Priority List
- Joint Lessons Learned
- Ongoing Operations

External Influences
- Congressional Oversight
- GAO
- Inspector General

Related DoD Initiatives
- Financial Reform
- Business Improvement Council
- Defense Business Board

DoD Logistics
- $90B+/year
- Over 1 million people
- 16-day customer wait time
- Over 600 disparate systems

Service Initiatives (over 500)
- Product support
- Footprint reduction
- Customer wait time

Public Perceptions
- Freedom is Free
- Conflict is quick
- Government should be accountable

Our Complex Web
**Transforming Logistics**

“Little Cold War”
- $90B/year operating costs
- 80’s readiness
- $67B in inventory
- 16-day CWT
- 788M cubic feet of storage space

Global War on Terror
- $70B/year operating costs
- High 90’s readiness
- $50B in inventory
- 2-day reliable delivery
- 300M cubic feet of storage space
Transforming Logistics

• Reduce immediate risk
  – Increase readiness

• Reengineer the “Pipeline of Freedom”
  – To commercial standards through commercial practices

• Accelerate the “Arsenal of Democracy”
  – Buy our way out
Fleet-Wide Aircraft Age Trend*

* Data based on 2001 figures
Source: Joint Council on Aging Aircraft
Cost of Aging
Flying Hour Program Costs

Problem: We are eating our young!

Problem: We are eating our young!
Focus on LD/HD Assets: AWACS

Recent Results
- Exceeding ACC availability
- Improved depot on-time delivery by 60%
- Increased reliability of key subsystems
- Exceeded 83% MC rate during OIF

Program Management
- Fielded System
- PM as Life Cycle Manager
- Managed to ACC performance expectations
- Synchronized modernization, R-TOC, and PDM
- Invested $170M in R&M improvements

Performance Management
- Performance based on ACC requirements
- Organic maintenance and supply support managed through Service-level agreements
- Industry partners incentivized to reduce lead times
- SPD provides program management, configuration control, sustaining engineering
Focus on LD/HD Assets:  B-2

**Recent Results**
- Exceeding ACC availability
- 50% reduction in MMH/FH (projected)
- Exceeded OIF forward operating base requirements
- Eliminated all LO backlogs
- Accelerated tactical radio secure SATCOM capability
- Achieved 72% MC rate (historical high)

**Program Management**
- Fielded System
- Maintenance Officer as PM
- Managed to ACC performance expectations
- 7-year management goals; 10-year roadmap
- Synchronized modernization, R-TOC, and PDM
- Aggressively managed DMS program

**Government/Industry Partnership**
- Northrop-Grumman PBL awarded in FY03
- Organic maintenance and supply support (DLA)
- SPD provides program management, configuration control, sustaining engineering
Near-Term: Reengineer to World-Class Standards

- Implement integrated supply chains for weapon systems
- Implement commercial business solutions
- Infuse accountability and performance measurements

Force-centric Logistics Enterprise
Weapon System Support Challenges

**Operational Challenges**
- Availability of parts
- High maintenance levels
- Retention/turnover of maintenance personnel
- Large maintenance/supply footprint

**Structural Challenges**
- Equipment designed to 75-85% availability
- Disjointed acquisition and logistics processes and accountability
- $67B per year in cost; no link to output
- Disjointed, functional support structure
- 16-day CWT for high priority parts
- 50% of cost tied to maintenance; vast majority at O&I level
- Aging organic depot infrastructure

**Implications for Transformation**
- Will not support rapid force projection
- Large footprint (people and equipment)
- Complex, disjointed logistics chains
- Limited asset visibility

**Mid-Term Solutions FLE Initiative**
- Total Life Cycle Systems Management
- Performance-Based Logistics
- Depot Partnering
- Conditioned-Based Maintenance +

Integrated strategy to achieve end-to-end accountability for weapon system support that meets transformation goals and requirements.
Future System Sustainment

Real-Time System Status (CBM+)

Industry/Government

Partnerships

Performance-Based Logistics

Weapon System Manager

Force Provider

Ensure system is sustained at optimum level

Performance Agreement

Provide continuous, reliable, affordable support

Performance Agreement

Visibility into cost/risk decisions across life cycle

Providing operational availability; not parts.
Automatically generates re-supply requirements information and provides platform health info...

**Army Stryker Vehicle**

*Integrated Weapon System Status and Health Management*

**Sensor-Based**

Automatically feeds Army Shared Data Environment

**Self Monitoring**

Synchronized

**Self Reporting**

Enterprise Resource Planning

Standard Army Management Information

Fuel Status

Automatic Identification Technology

Subsistence Status

Serialized Item Management

An installed part of the vehicle

Interactive Electronic Technical Manuals (software) to troubleshoot, test, document, report

To assist in maintenance management, troubleshooting, parts ordering, status

Specialized software and/or hardware (laptop)

Software that integrates all the information to identify impending failure, order parts

Embedded Diagnostics and Prognostics

Track health and status of installed components

Global Combat Support Systems Army

ERP

STAMIS

GCSS-A Interface

Fuel sensor

Ammunition Status and Prognostics

Ammunition Status

Serial Number by type

- Ed/Ep

- Sensors

- Serialized Item

- AIT/SIM

- Ammo sensors

- Sensors

- Data Bus

- Data Base

- Reasoner

- Maintenance Aid

- IETMs

Crew Display

Crew Status..Health

- Crew Indications (Operator's Station)

- Water Status

- Supply Status

- H20 sensor

- Sensors

- Automatic Identification Technology

- Track health and status of installed components

- Enterprise Resource Planning

- Standard Army Management Information

- Fuel Status

- Automatic Identification Technology

- Subsistence Status

- Serialized Item Management

- An installed part of the vehicle

- Interactive Electronic Technical Manuals (software) to troubleshoot, test, document, report

- To assist in maintenance management, troubleshooting, parts ordering, status

- Specialized software and/or hardware (laptop)
CBM+: Maintenance-Centric Logistics Support

- Real-time status of prime mission equipment
- Minimal maintenance footprint
- Integrated supply/maintenance systems via serial item management

Maintenance & Information Systems

Embedded Sensors

Data Transfer

Maintenance History Configuration Control (serial items)

IETMs

Interactive Training

Portable Maintenance Aids

Production Control

Maintenance Data Analysis

Command & Control

Linked to Warfighters

Preventive Maintenance

Predictive Maintenance

Reduced Footprints

Anticipatory Materiel

Tech Support

Troubleshooting and Repair

On-Board Diagnostics and Prognostics

Embedded Data Bus

Wholesale Logistics

Integrated Logistics Information

Full Asset Visibility
Programs Contributing to GWOT

JSTARS
B-2
F/A-18 E/F
F-117
AWACS
C-17
Common Ground Station

Delivering Capability NOW!
Common Ground Station

- PM is life cycle manager
- Government led PBL strategy
- Tobyhanna is product support integrator
- Deployed 30 CGS to support OIF
- Streamlined maintenance flow
- Achieved 99% Ao during OIF
- Forward-located repair activity at Baghdad International Airport
- Achieved real-time fleet management/asset visibility
Weapon System Sustainment Roadmap

Today
• Suppressed Readiness
• Marginal reliability
• Fractionated Accountability
• $67B/year
• Huge footprint

PM accountable for life cycle
JROC established sustainment requirements
Enabling Depot legislation
Revised Maintenance Policy
Industry Supply Chains
Reengineered Training

Number of Partnerships (1998 & 2002)

• Joint Strike Fighter
• Future Combat System
• Advanced Amphibious Assault Vehicle

Warfighter-driven readiness
Ultra-reliability
Clear PM accountability
Minimal Footprint

Financial Reform (PR05)
Single-line Accounting
Life Cycle Cost Management
Operational requirements synchronized with PBBS

PBL Implementations

* Projected PBLs Based on Approved Service Plans
End-to-End Warfighter Support Challenges

Operational Challenges
- Conflicting in-theater roles and responsibilities
- Extended customer wait time
- High variability in response times
- Limited visibility/control over material flow

Structural Challenges
- Hard breaks between national and retail activities
- Financial processes driving behavior
- Military-unique information systems (batch processed)

Implications for Transformation
- Large footprint
- Complicated crisis planning
- Delayed response cycle

FLE Initiative
- Define end-to-end Executive Agents
- Adopt commercial distribution processes
- Implement Performance-Based Logistics
- Employ COTS solutions

Coherent strategy to capitalize on commercial model and practices to rapidly improve warfighter support.
Continuing Challenges

Theater Distribution Center, Apr 03, Kuwait
Commercial Business Solutions:
(Revised Supply Policy)

- Guidance presented by functional area
- Focus – Mechanics of performing supply functions
- Material managers select support alternatives for programs
- Max use of commercial with no guidance on interfaces required for success
- Guidance on MILS systems only
- Traditional programs/practices
- No MX/Supply cohesion

- Guidance presented with SCOR process model
- Focus – Customer oriented supply, best value decision-making
- Program manager select support alternatives
- Best value use of organic, commercial, and partnerships with guidance on interfaces
- Use of COTS and guidance relative to materiel management systems
- TLCSM & state-of-art procedures
- Maintenance/Supply interaction
Commercial Business Solutions: Consumable Materiel

DEMAND/SPEND
2% of items with 80% of sales

READINESS FACTORS
Surge & sustainment items, Not Mission Capable drivers and Weapon System Identifier Code & critical items with high Production Lead Time

Business Systems Modernization concept demo

Strategic Materiel Sourcing Groups Items for Placement on Contract

Standard Long Term Contracts
Corporate Contract
Prime Vendor Virtual Prime Vendor
Strategic Supplier Alliances
Operational Benefits of Effective Supply Chain Management

Overall: Reduced in theater stocks from 60 DOS to less than 10
Commercial Business Solutions: Distribution

Demand Planning

Rules and Tools guide Customer-Supplier relationship

Customer Places Orders

Order confirmation number (Order Status by Exception)

Supply Planning

Supply Center (source, pick, configure, pack, label)

Sources of Supply

Next Day

Next Day

Performance: Hours/Days

Shipment arrives (Time definite delivery)

Carrier (AMC, UPS, FedEx, APL etc.)

Fulfillment Agents

Simple, Responsive, Reliable, Visible
Enterprise Integration

Logistics Balanced Scorecard
Synchronized to DoD BSC

Warfighting Perspective
Provide optimum responsive logistics support to the joint warfighter to ensure:
- An immediately employable force option
- A rapidly deployable capability
- A sustainable total force

Innovation & Learning Perspective
Ensure a capable workforce responsible for meeting the warfighter logistics support requirements to include:
- Introduction of leading edge advanced concepts
- Organization adaptability
- Workforce shaping

Logistics Process Perspective
Provide effective logistics chain performance and capacity while reducing the logistics footprint to include:
- R&M, Leveraging Global Industry, IT Improvements, and Commercial Advances
- Organization adaptability
- Workforce shaping

Resource Planning Perspective
Ensure affordable logistics support through resources and choices that enable effective joint warfighter capability to include:
- Accurately forecast and identify logistics requirements
- Identify and understand the risks associated with logistics resource allocation

Enterprise Integration End State:
Highly trained and skilled people within the DoD Logistics Enterprise have access to near real time, actionable information
...provided by modern, commercially-based software products
...that have been rapidly implemented to enable reengineered logistics processes and business rules

Leading DoD Enterprise Integration

Portfolio Management

DUSD(L&MR) Guidance & Oversight/Integration

Execution And Modernization
- Evaluate Logistics AISs and Databases
- Identify Systems to be:
  - Eliminated
  - Sustained
  - Integrated

Component Execution Plans
- Milestones
- Schedules/Brown Out
- Critical System/ Database Information (IT meta data)

Component Strategies
- Management Approach
- CIO Interface
- Evaluation Criteria
- Process Methodology
- Metrics
- POM Considerations

Streamlined Portfolio Management

Linking people, processes & information...
...to seamlessly deliver warfighting capability.

FLE
Logistics Situational Awareness

The Fix … Situational Awareness through Shared Knowledge

- Ability to Track & Shift Assets
- Information Flow
- Tailored Packages
- Rapid Response
Long-Term: Accelerate Modernization of Highly Reliable Systems

- Reduce footprint as a military requirement
- Streamline the acquisition process
- Achieve Focused Logistics
- Achieve net-centric operations
JROC: Focusing on Capability

- Capability based
- Net-centric driven
- Mobility/footprint are military capabilities
- Reliability/maintainability are military performance parameters
The “Future” is being determined NOW!

Designing OUT Logistics
Focused Logistics

Rapid delivery of mission-ready forces

Rapid distribution of tailored support packages

End-to-end communications

Total asset visibility

Information fusion

Logistics decision superiority

Reduced inventory, smaller footprint, faster response

Bottom line: Forces in theater — whether forward-stationed or deployed — deliver more capability, require less support
Logistics Transformation

Mass-Based
- More is better
- Mountains of stuff measured in days of supply
- Uses massive inventory to hedge against uncertainty in demand and supply
- Mass begets mass and slows everything down

Prime Metric: Days of supply

Just-in-Time
- Precision is better
- Reduce Inventory to a minimum and keep moving
- Use precise demand prediction and optimization to reduce uncertainty
- Works great, except when it doesn’t

Prime Metric: Flow Time

Sense and Respond
- Agile is better
- Dynamically positioned Inventory throughout
- Use transportation flexibility and robust IT to handle uncertainty
- Supports adaptive operations

Prime Metric: Effects

Migrating to the Force-centric Logistics Enterprise
The Problem: Logistics in a World of Network Centric Operations

- Classic logistics is not agile enough for distributed adaptive operations
  - Has no ability to reconfigure the logistics network relationships, inventory, or distribution strategy
  - Entails long buildup times, longer resupply cycles, and large inventories
  - Operates best with “massing of forces” combat doctrine

- Classic logistics involves an unstable combination of push and pull signals
  - Supply pull signals beyond the first level are inventory fills
  - Rear suppliers don’t see combat unit demand and can be whipsawed

- Classic logistics is vulnerable
  - Results in asset concentration in stockpiles towards rear (targets)
  - Relies on a linear battlefield and secure log area
  - Exhibits predictable network structure

- Classic logistics is inefficient
  - Combat units can only draw on the supply in their chain, not (typically) the total battlefield stocks or stocks of other services
Sense and Respond Logistics

• Supply network is dynamic
  – Supply doctrine anticipates reconfigurable supply nets
  – Emphasizes transportation flexibility over large inventories

• Negotiation-based relationships
  – All entities use commander’s intent and detailed situation awareness to negotiate and synchronize
  – Roles and commitments of entities are dynamically defined within a specific context
  – All entities are described in terms of current capabilities, not as static forces

• Networks are difficult to analyze and attack
  – More robust to node failure
  – Adapts to real-time demand driven by unit signals

• Supports a more logistically agile force
  – Network adaptivity allows logistics decisions to be made later
  – Emphasis on information and transportation allows a greater degree of operational flexibility

Network

Very robust, complex pattern, complex control, scale free
‘business end’ best connected, natural to reconfigure or change flow
The End Game

Ubiquitous, cost-effective capability to project and sustain power.