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<td>Ofc Deputy Under Secretary of Defense, (Logistics &amp; Material Readiness), 3500 Defense Pentagon, Washington, DC, 20301-3500</td>
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Defense maintenance is big business, costing more than $59 billion annually and involving more than 680,000 military and civilian maintainers who—along with several thousand commercial firms—support approximately 300 ships, 15,000 aircraft, 900 strategic missiles, and 330,000 ground combat and tactical vehicles.

The *DoD Maintenance Fact Book* contains a broad range of information about DoD maintenance capabilities and programs that span major depots and shipyards as well as intermediate and organizational-level units throughout the world.

Also included are the winners of the 2003 and 2004 DoD maintenance awards and a recap of some of the Department’s key technology and management initiatives.

David V. Pauling
Assistant Deputy Under Secretary of Defense
(Maintenance Policy, Programs and Resources)
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Mission Statement

ADUSD(MPP&R):

- Provides the functional expertise for centralized maintenance policy and management oversight for all weapon systems and military equipment, maintenance programs, and related resources within the Department of Defense. In this regard, the goals of the Office are to establish and maintain maintenance policies and programs that are managerially and technologically sound and adequately resourced to maintain the desired levels of weapon systems and military equipment readiness to accomplish the Department’s missions.

- Is the principal advisor for policies and procedures for materiel readiness and sustainment support of major weapon systems and combat support equipment. The Office integrates the materiel readiness aspects of all logistics functions: Supply Chain Integration, Transportation Policy, Logistics Plans and Programs, and Logistics Systems Management (as well as Maintenance). Key goals include influencing resource allocation decisions, enhancing materiel readiness policies and procedures, providing materiel readiness oversight (by leveraging Service and DLA efforts), and initiating focused studies.
Major Initiatives of ADUSD(MPP&R)

- Commercial Technology for Maintenance Activities (CTMA)
- Condition-Based Maintenance Plus (CBM+)
- Lean Maintenance
- Public-Private Partnering (PPP)
- Unique Identification (UID)

Detailed information on DoD initiatives is available at www.acq.osd.mil/log/mppr
Commercial Technology for Maintenance Activities

• Description—A cooperative agreement between the National Center for Manufacturing Sciences (NCMS) and ADUSD(MPP&R) to co-sponsor technology development, deployment, and validation with DoD field and organic depot maintenance activities in partnership with NCMS member companies.

• Goals
  – Transfer contemporary commercial technologies and practices to DoD maintenance activities via NCMS member companies.
  – Assess the benefits of new manufacturing and repair technologies in DoD facilities by partnering with NCMS members and working with industry leaders to solve manufacturing problems through collaboration.

• Key Features
  – Program identifies, develops, and funds specific projects that employ commercial technologies and best business practices to reduce costs, decrease cycle times, and improve readiness.
  – DoD provides only 1/3 of the costs for CTMA projects; the remaining 2/3 is provided by DoD’s industrial partners.
Condition-Based Maintenance Plus

• **Description**—An effort to improve maintenance effectiveness and efficiency through application of technology initiatives and process improvements

• **Goals**
  - Optimally schedule preventive maintenance
  - Identify opportunities for predictive maintenance
  - Eliminate/minimize unplanned corrective maintenance activity

• **Key Features**
  - Uses interactive electronic technical manuals, portable maintenance aids, and other enabling tools and technologies
  - Implements diagnostics, sensors, and prognostic algorithms and techniques
  - Employs reliability-centered maintenance concepts and practices
  - Enables statistical and engineering analysis processes
  - Develops condition-driven maintenance plans
  - Integrates maintenance and logistics processes and reporting systems
Lean Maintenance

• Description—Continuous process improvement to maximize weapon system readiness while minimizing materiel flows and in-process inventories

• Goal—Optimize reliability and cycle time while striking a reasonable balance with costs across the total life cycle value chain

• Key Features
  – Employs
    • Lean for eliminating all types of waste
    • Six Sigma (6σ) for minimizing process variation
    • Theory of Constraints (TOC) for alleviating process “bottlenecks”
  – Focuses on
    • strong involved leadership committing significant time and resources
    • workforce buy-in
    • education and training for all value chain participants
    • clear outcome-focused metrics that are measurable and provable
    • ambitious and continuous improvement goals across the entire value chain
Unique Identification

• Description—An effort to establish globally-unique and unambiguous parts identifiers

• Goals
  – Use data elements to track DoD parts
  – Ensure data integrity and quality throughout the item’s life cycle
  – Support multifaceted business applications and users
  – Facilitate Serialized Item Management (SIM) per DODD 4151.18

• Key Features
  – Data integration across DoD, government, and industry systems as envisioned by the DoD Business Enterprise Architecture
  – Improved item management and accountability
  – Improved asset visibility and life-cycle management
  – Clean audit opinions on the property, plant, and equipment and operating materials and supplies portions of DoD financial statements
Depot Maintenance
Public-Private Partnering

• Description—A logistics sustainment philosophy involving cooperative partnership agreements that can include
  – program and/or system support managers
  – original equipment manufacturers and/or other private sector firms
  – service maintenance depots

• Goals
  – Make product support more responsive
  – Increase facility utilization
  – Improve depot processes and technology
  – Reduce cost of ownership

• Key Features
  – Uses public sector facilities, equipment, and employees to perform work for commercial industry
  – Establishes partnering agreements that integrate public and private sector facilities and employees
Growth Trend in Public-Private Partnerships

The Result: Maintenance Transformation

- Real-time status of equipment materiel condition
- Integrated supply/maintenance to enhance system readiness
- Asset visibility through item tracking initiatives
Systems Supported by DoD Maintenance

- 30,000 Combat Vehicles
- ~900 Strategic Missiles
- ~300 Ships
- ~15,000 Aircraft/Helicopters
  - + 300,000 Tactical Vehicles
  - + Communications/Electronics Equipment
  - + Support Equipment
  - + ...

Maintained by:
- 681,000 DoD personnel
- Private sector companies

Maintenance cost:
~$59 billion per year

National Defense PP&E is valued at ~$700 billion

Source: LMI analysis of DoD data
Scope of DoD Maintenance

- 3 Million DoD Personnel
  - 681,000 Maintainers
  - 23% of DoD personnel are maintainers

- $433 Billion DoD Budget
  - ~$59 Billion
  - 14% of DoD funding is spent on maintenance

Sources: LMI analysis of Defense Manpower Data Center data and FY2005–FY2009 President’s Budget
Levels of DoD Maintenance

Organizational | Intermediate | Regional | Depot

Increasing volume of maintenance

More frequent tasks that require less facilitization/skills

Increasing complexity of maintenance

Less frequent tasks that require more facilitization/skills
Major Intermediate-Level Activities

- **Army**
  - 21 aviation intermediate maintenance (AVIM) companies
  - 70+ direct support/general support (DS/GS) companies
- **Navy**
  - 15 shore-based aircraft intermediate maintenance detachments (AIMDs)
  - 23 shipboard AIMDs
  - 7 ship/submarine intermediate maintenance facilities (IMFs)
- **Air Force**
  - 65 aircraft maintenance groups (MXGs)
- **Marine Corps**
  - 11 Marine aviation logistics squadrons (MALs)
  - 3 maintenance battalions

Data on this chart does not include National Guard and Reserve intermediate maintenance activities

Source: LMI analysis of service maintenance infrastructure data
Personnel Strength of Field- and Depot-Level Maintenance

~640,000 field-level maintainers

~70,000 depot-level personnel

Source: LMI analysis of Defense Manpower Data Center and Joint Depot Maintenance Activity Group data
Maintenance Personnel
Worldwide

Locations reflect home stations of units/personnel

Source: LMI analysis of Defense Manpower Data Center data
Maintenance Personnel by State/Territory

523,000 Maintenance Personnel
In U.S. and Territories

Source: LMI analysis of Defense Manpower Data Center data
DoD Maintainers
by Military Service

Source: LMI analysis of Defense Manpower Data Center data
DoD Maintainers by Personnel Category

Source: LMI analysis of Defense Manpower Data Center data
Active Duty
Maintainers

69% Commissioned Officer
31% Warrant Officer

Enlisted
364,000

13,000

64% Mechanical/Electrical
27% Electronic
5% Craftworkers
4% Other

Source: LMI analysis of Defense Manpower Data Center data
National Guard & Reserve
Maintainers

63% Commissioned Officer
37% Warrant Officer

Enlisted 172,000

71% Mechanical/Electrical
19% Electronic
7% Craftworkers
3% Other

Source: LMI analysis of Defense Manpower Data Center data
DoD Civilian Maintainers

32% Electrical & Electronic
19% Production Management
10% Communications & Radar
11% Aviation Maintenance
28% Other

Source: LMI analysis of Defense Manpower Data Center data
Major depot-level activities comprise depots and shipyards that employ 400 or more personnel.
Organic-Commercial Mix of DoD Depot Maintenance Workload

DoD-wide: 54% Organic; 46% Commercial

Workload Cost by Major System Category

Depot Maintenance Performed by DoD Organic Depots

- Ground Systems: 10%
- Aircraft: 48%
- Sea Systems: 29%
- All Other: 13%

Depot Maintenance Performed by Defense Contractors

- Ground Systems: 9%
- Aircraft: 55%
- Sea Systems: 23%
- All Other: 13%

Overall Organic Depot Capacity Utilization: ~90%

2003 Phoenix Award Winner
The Highest Secretary of Defense Award for
Field-Level Maintenance

3-7th Infantry Battalion,
3rd Infantry Division (Mechanized)
Fort Stewart, GA
“Cottonbalers”

- Deployed for Kosovo Force Operations with 54 pieces of assigned equipment and drew 512 additional pieces of rolling stock
- Maintained an exceptionally high readiness rate of 97 percent for the year
- Executed more than 100 vehicle recovery operations on deployment in hostile environments
- Completed a rapid regeneration after deployment to accommodate training and return to full operational capability
2003 Secretary of Defense Maintenance Award Winners

- Strike Fighter Squadron Eight One (VFA-81)
  Naval Air Station, Oceana, Virginia, USN
- 74\textsuperscript{th} Fighter Squadron
  Pope Air Force Base, North Carolina, USAF
- Shore Intermediate Maintenance Activity Mayport
  Naval Station, Mayport, Florida, USN
- Marine Aviation Logistics Squadron 12 (MALS-12)
  Marine Corps Air Station, Iwakuni, Japan, USMC
- 3rd Battalion, 7th Infantry Regiment, 3rd Infantry Division (Mech)
  Fort Stewart, Georgia, USA
- Marine Aviation Logistics Squadron 14 (MALS-14)
  Marine Corps Air Station, Cherry Point, North Carolina, USMC
2004 Secretary of Defense Maintenance Award Winners

- Marine Heavy Helicopter Squadron 462
  Marine Corps Air Station Miramar, California, USMC

- 509th Munitions Squadron
  Whiteman Air Force Base, Missouri, USAF

- 3rd Military Intelligence Battalion (Aerial Exploitation)
  Camp Humphreys, Republic of Korea, USA

- Combat Service Support Battalion 10
  Marine Corps Air Ground Combat Center, Twentynine Palms, California, USMC

- USS ABRAHAM LINCOLN (CVN 72)
  Naval Station Everett, Washington, USN

- 27th Maintenance Group
  Cannon Air Force Base, New Mexico, USAF
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<td>Aircraft Intermediate Maintenance Detachment</td>
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<td>AD</td>
<td>Army Depot</td>
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<td>AMARC</td>
<td>Aerospace Maintenance and Regeneration Center</td>
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<td>AVIM</td>
<td>Aviation Intermediate Maintenance</td>
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<td>CBM+</td>
<td>Condition-Based Maintenance Plus</td>
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Explanatory Notes

• As depicted on page 13, DoD maintenance is performed at several levels of complexity, ranging from the rapid removal and replacement of components to complete overhaul or rebuild of a weapon system. The following terms are used throughout the *Fact Book*:
  – **Depot-level** for the most complex and extensive work
  – **Intermediate-level** for less complex maintenance performed in operating unit back-shops, base-wide activities, or in consolidated **regional** facilities
  – **Organizational-level** for more time-sensitive work performed in the field, on the flight line, or at the equipment site
  – **Field-level** is a term signifying the combination of the organizational and intermediate levels

• All charts in this document reflect FY2003 year-end data unless otherwise noted

• An electronic version of this document, as well as other information about the responsibilities and functions of the DoD Maintenance Policy, Programs and Resources office, is located on the following website: http://www.acq.osd.mil/log/mppr.html

• This document is published for information only and does not constitute official DoD correspondence
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