



DoD Maintenance Policy, Programs and Resources

FACT BOOK

2004

Report Documentation Page

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ACQUISITION, TECHNOLOGY
AND LOGISTICS

OFFICE OF THE DEPUTY UNDER SECRETARY OF DEFENSE
(LOGISTICS AND MATERIEL READINESS)
3500 DEFENSE PENTAGON
WASHINGTON DC 20301-3500

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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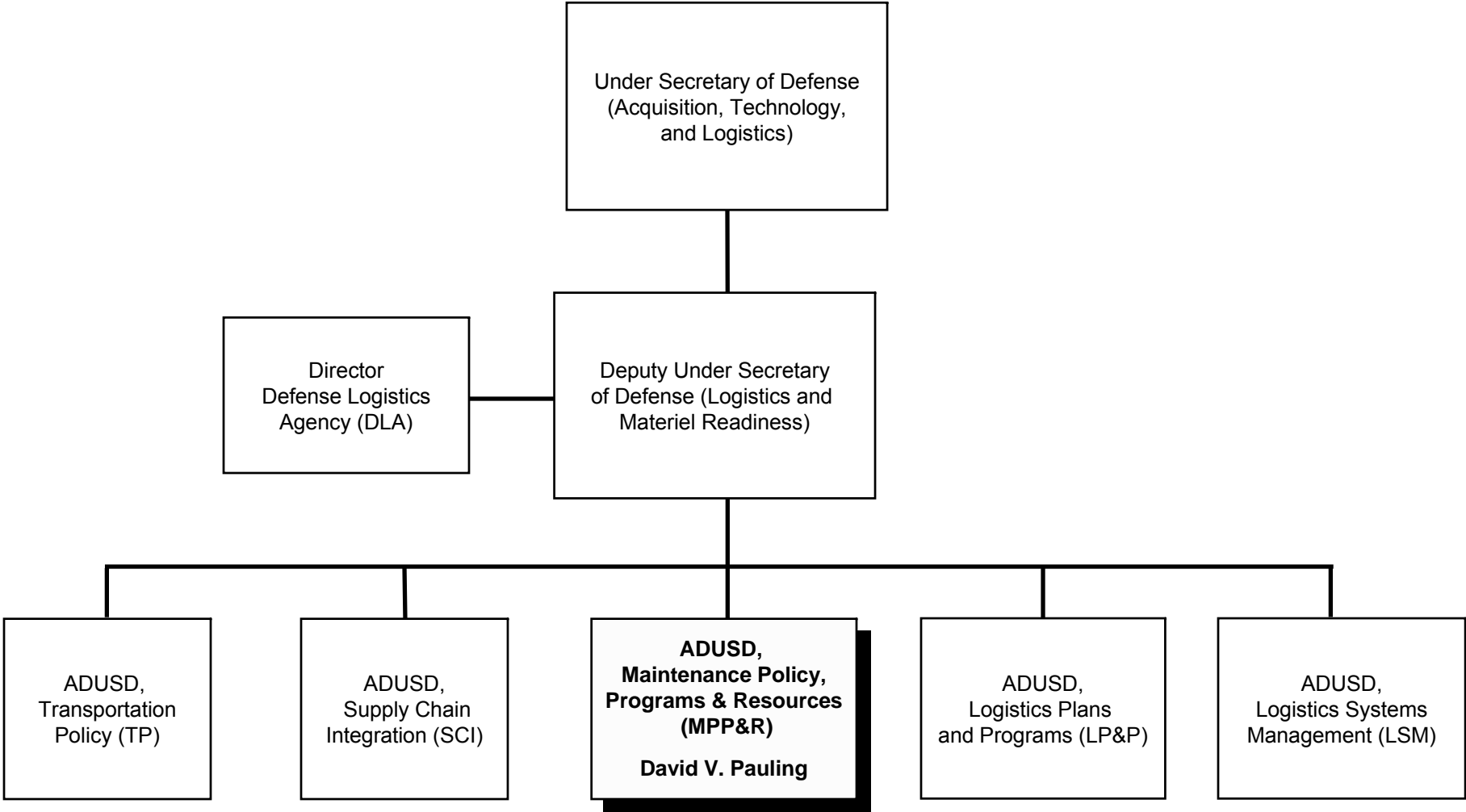
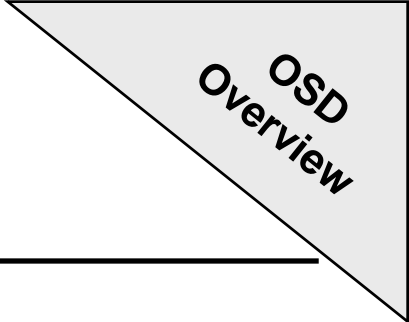
Awards

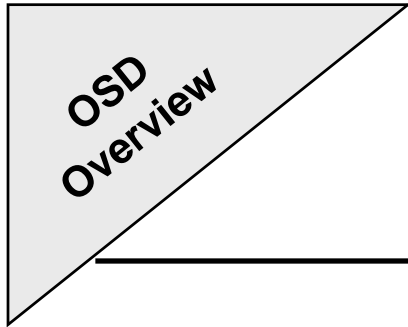
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OSD Logistics Organization





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.

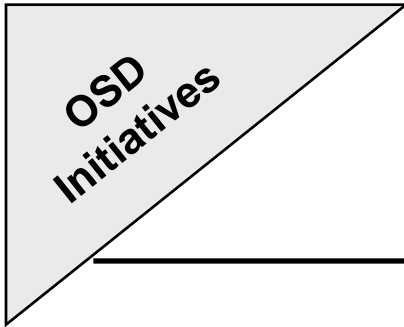
Major Initiatives of ADUSD(MPP&R)

A gray right-angled triangle pointing downwards and to the right, containing the text "OSD Initiatives" in black, slanted to follow the hypotenuse.

OSD
Initiatives

- 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

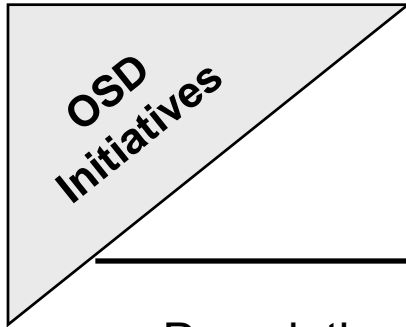
- Description—A cooperative agreement between the National Center for Manufacturing Sciences (NCMS) and ADUSD(MPP&R) to co-sponsor technology development, deployment, and validation with DoD field and organic depot maintenance activities in partnership with NCMS member companies
- Goals
 - Transfer contemporary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

A gray right-angled triangle pointing downwards and to the right, containing the text "OSD Initiatives" in black, rotated 45 degrees counter-clockwise.

OSD
Initiatives

- 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

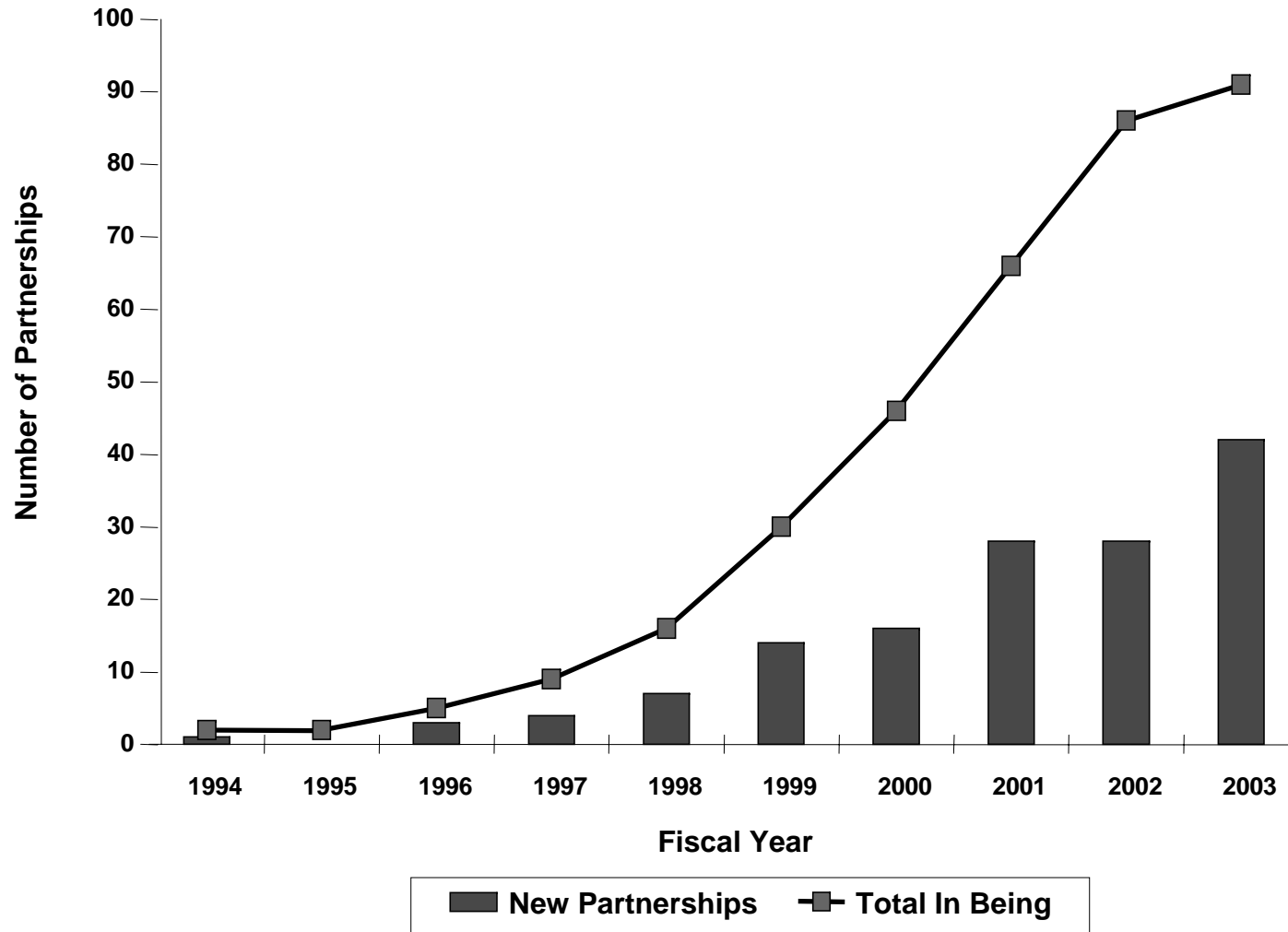
- Description—An effort to establish globally-unique and unambiguous parts identifiers
- Goals
 - Use data elements to track DoD parts
 - Ensure data integrity and quality throughout the item’s life cycle
 - Support multifaceted business applications and users
 - Facilitate Serialized Item Management (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

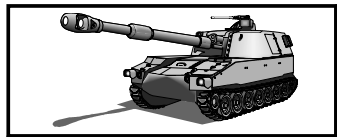
OSD
Initiatives



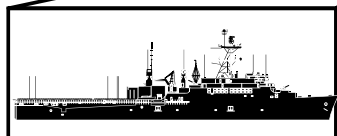
Source: DoD reports, *Public-Private Partnerships for Depot Maintenance*, July 2003 and July 2004

Systems Supported by DoD Maintenance

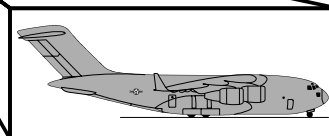
30,000
Combat Vehicles



~900 Strategic Missiles



~300 Ships



~15,000 Aircraft/Helicopters

- + 300,000 Tactical Vehicles
- + Communications/Electronics Equipment
- + Support Equipment
- + ...

Maintained by:

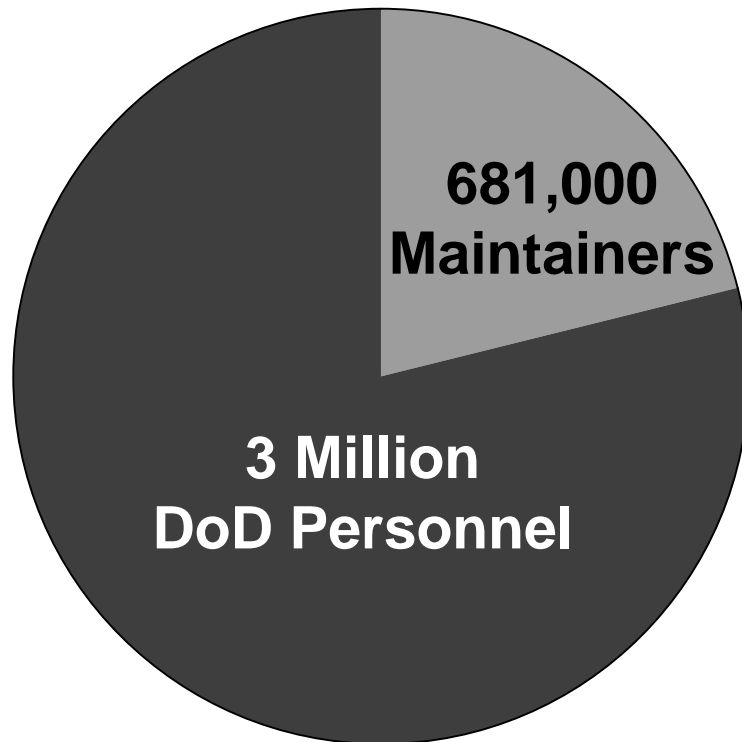
- 681,000 DoD personnel
- Private sector companies

Maintenance cost:
~\$59 billion per year

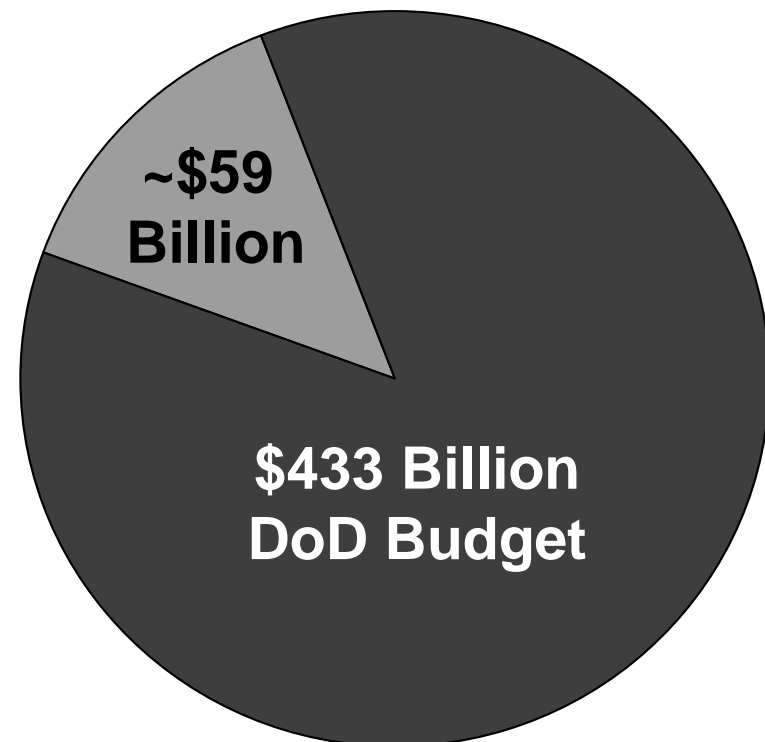
National Defense PP&E is valued at ~\$700 billion

Source: LMI analysis of DoD data

Scope of DoD Maintenance



23% of DoD personnel
are maintainers



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

Maintenance
Overview



Organizational



Intermediate



Regional

Depot

Increasing *volume* of maintenance

More frequent tasks that require
less facilitization/skills

Less frequent tasks that require
more facilitization/skills

Increasing *complexity* of maintenance

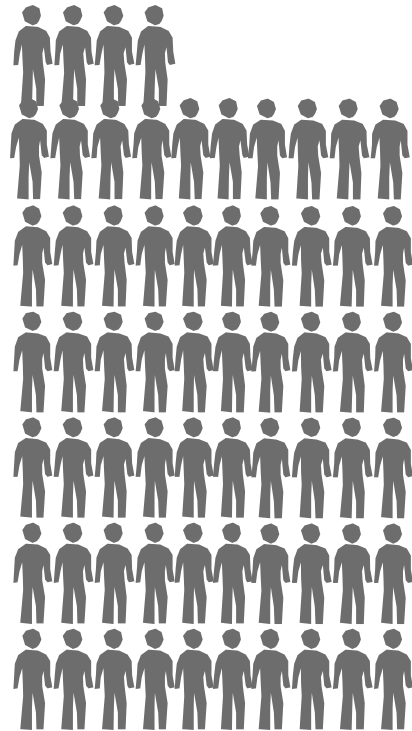
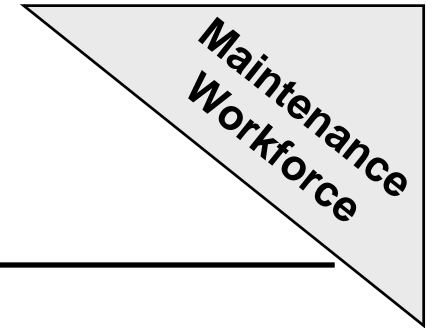
Major Intermediate-Level Activities

- 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



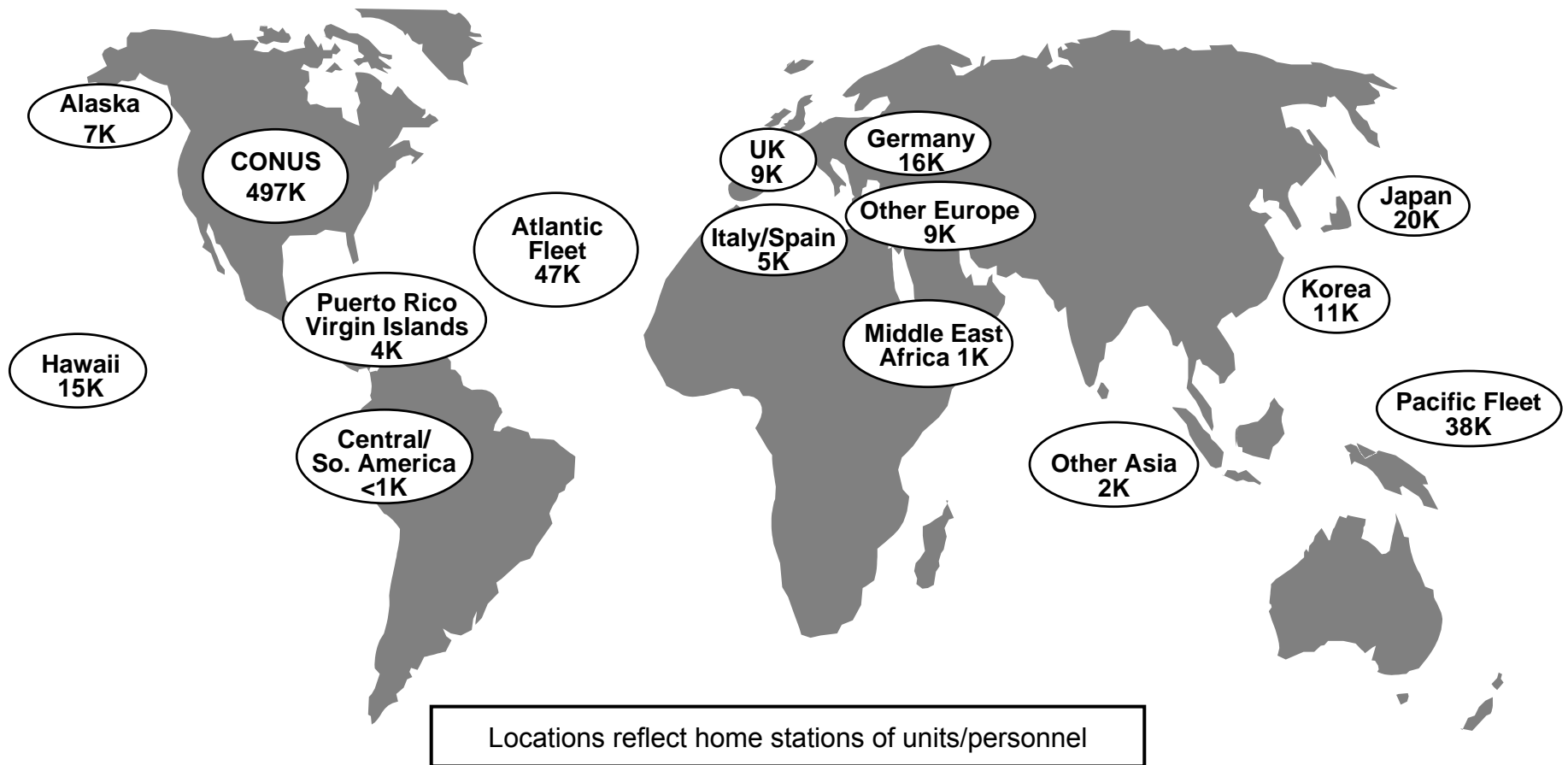
**~640,000 field-level
maintainers**



**~70,000 depot-level
personnel**

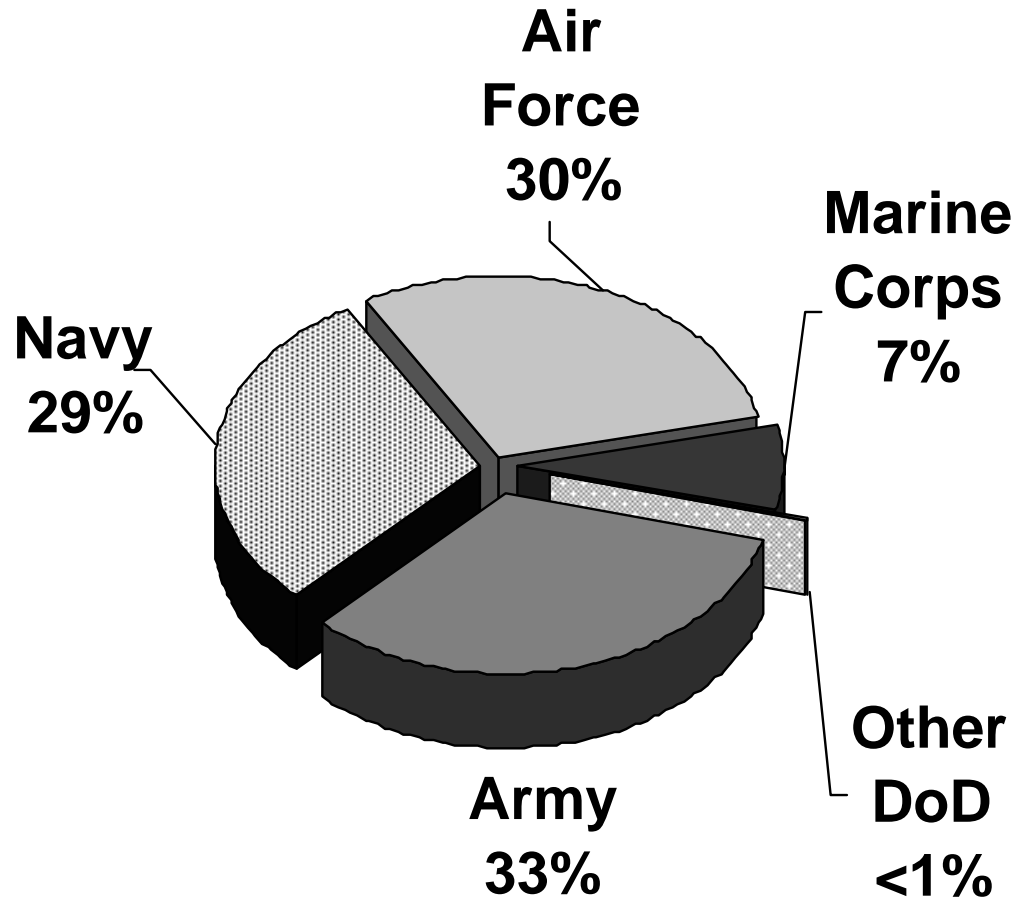
Source: LMI analysis of Defense Manpower Data Center
and Joint Depot Maintenance Activity Group data

Maintenance Personnel Worldwide



Source: LMI analysis of Defense Manpower Data Center data

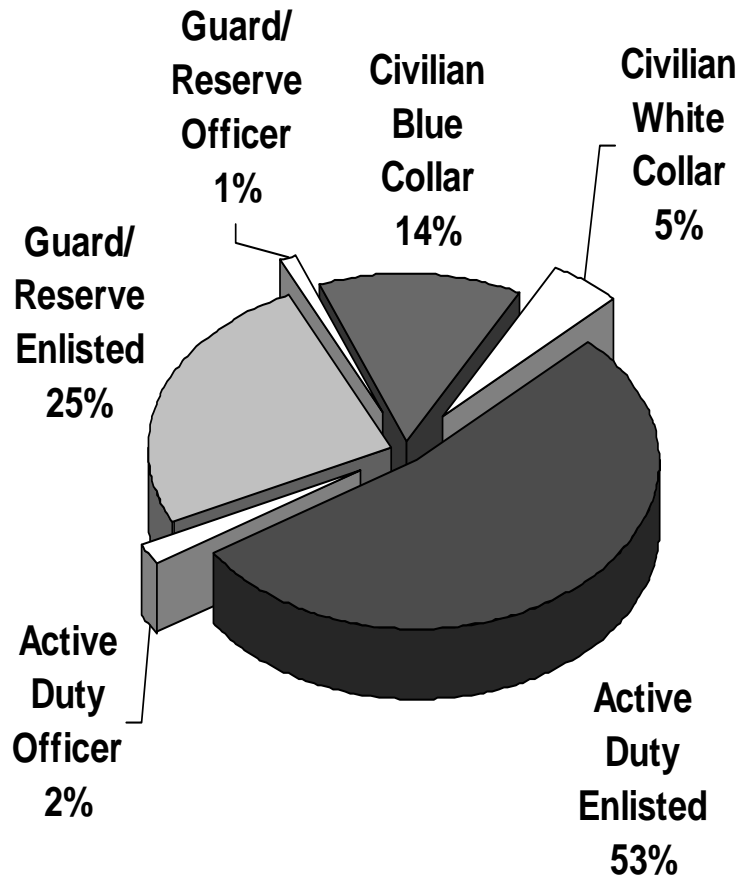
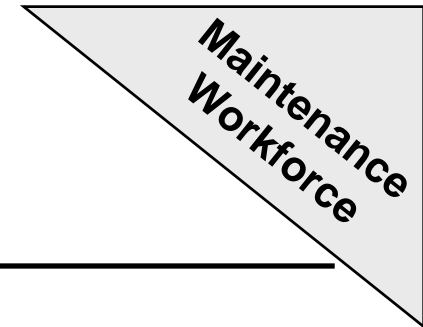
DoD Maintainers by Military Service



Army	226,000
Navy	200,000
Air Force	202,000
Marine Corps	51,000
Other DoD	2,000
Total DoD Maintainers	681,000

Source: LMI analysis of Defense Manpower Data Center data

DoD Maintainers by Personnel Category



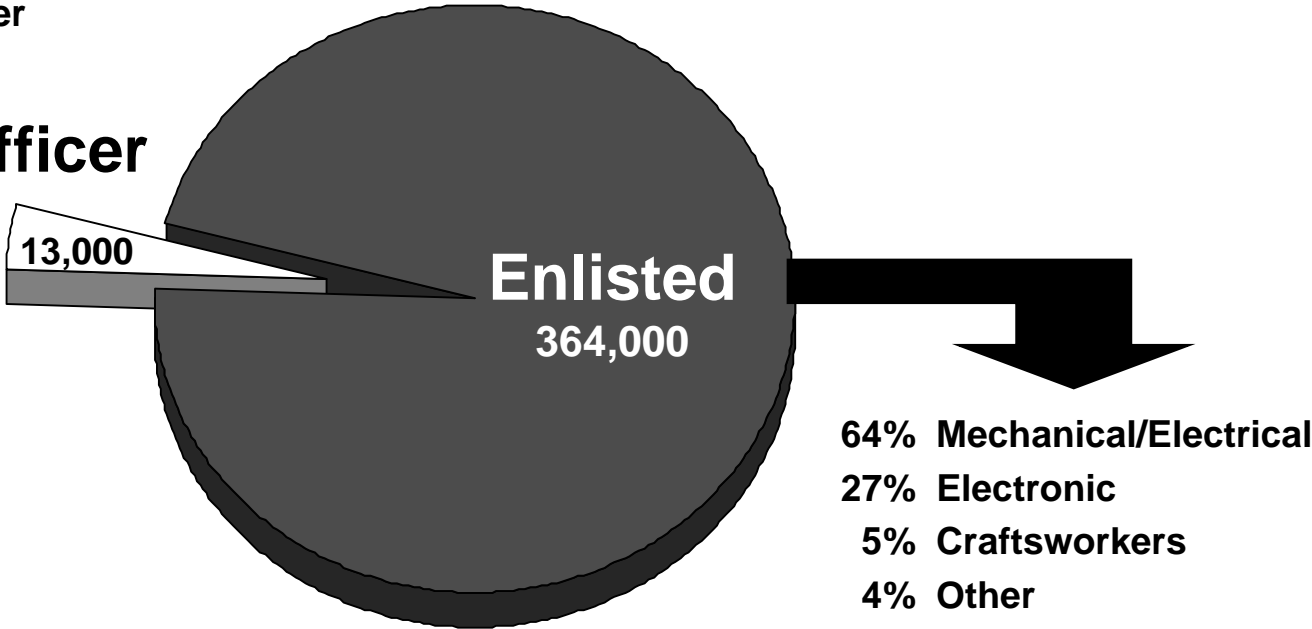
Active Duty Enlisted	364,000
Active Duty Officer	13,000
Selected Reserve Enlisted	172,000
Selected Reserve Officer	7,000
Civilian Blue Collar	93,000
Civilian White Collar	32,000
Total DoD Maintainers	681,000

Source: LMI analysis of Defense Manpower Data Center data

Active Duty Maintainers

69% Commissioned Officer
31% Warrant Officer

Officer



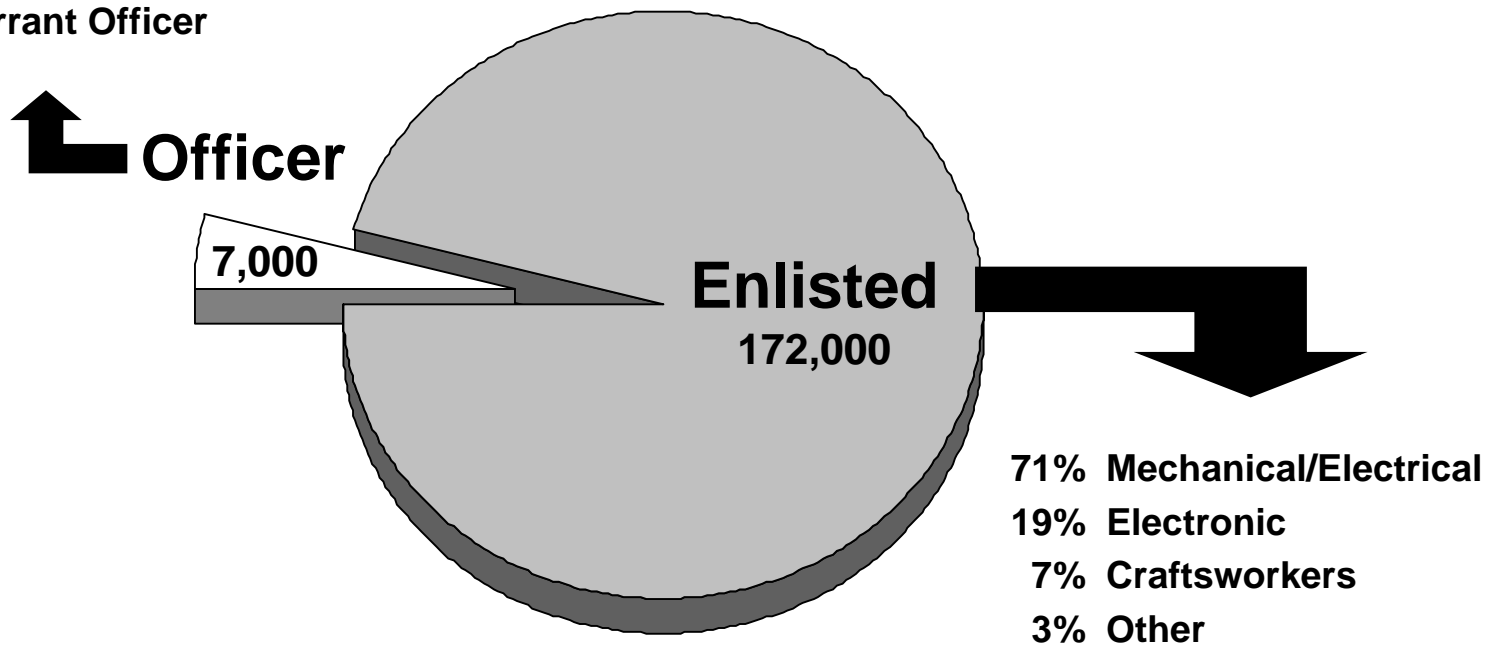
Source: LMI analysis of Defense Manpower Data Center data

National Guard & Reserve Maintainers

Maintenance
Workforce

63% Commissioned Officer

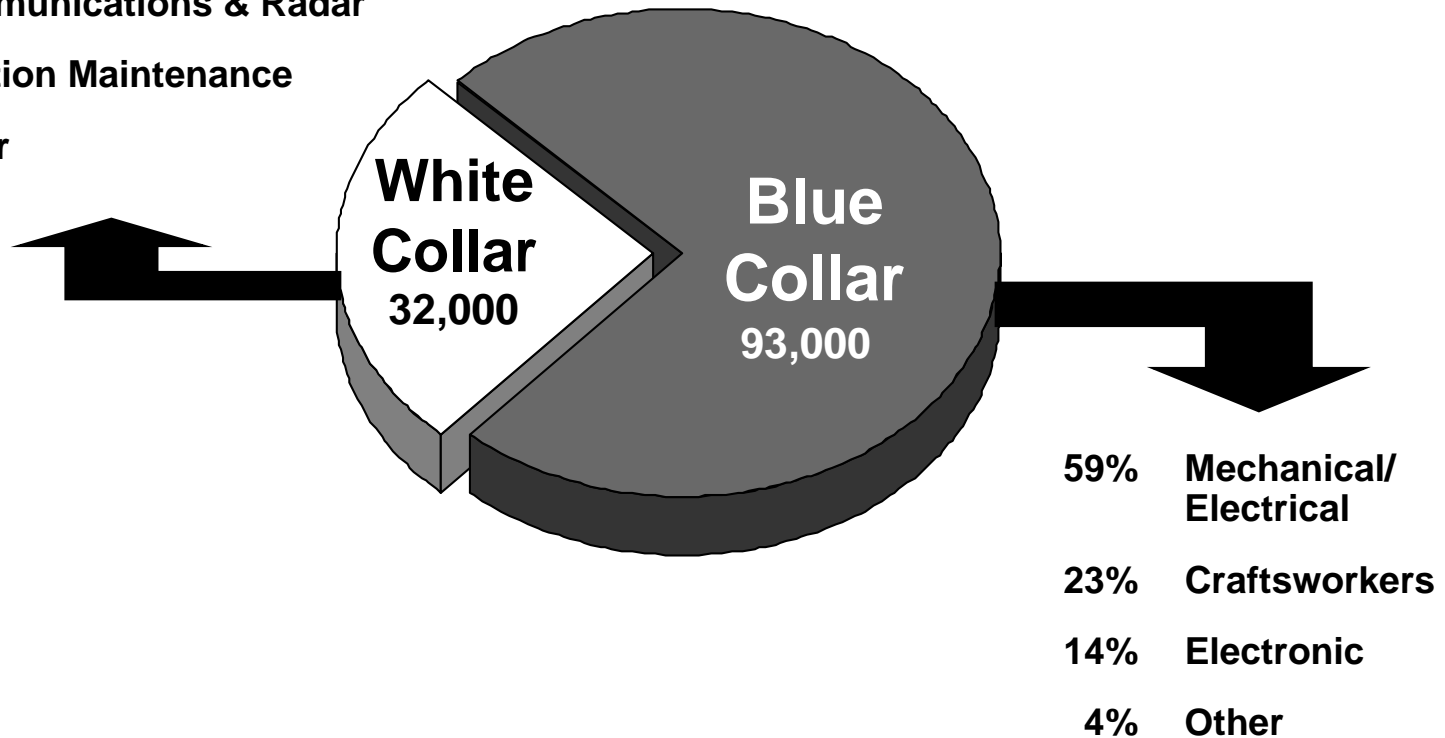
37% Warrant Officer



Source: LMI analysis of Defense Manpower Data Center data

DoD Civilian Maintainers

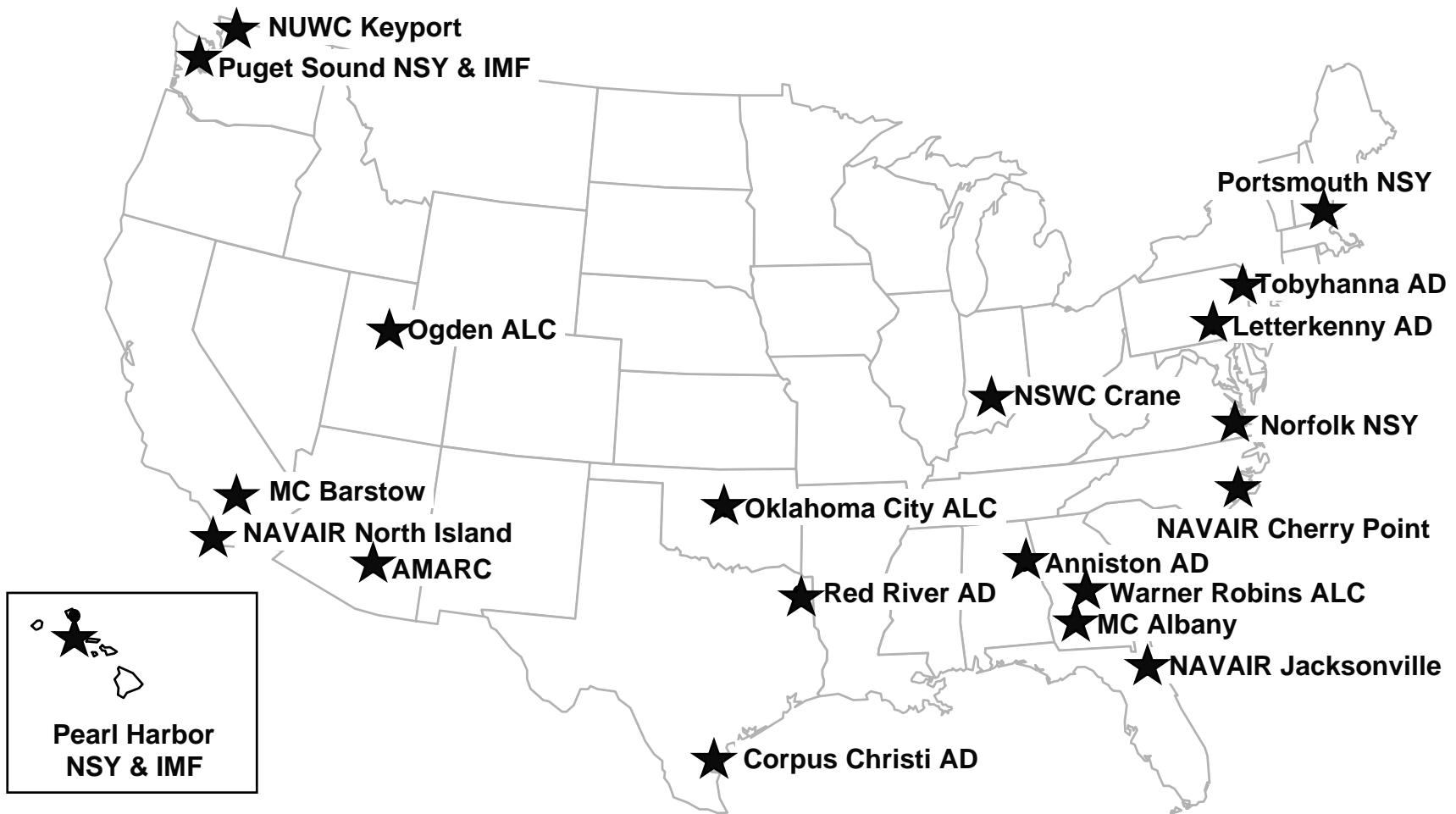
- 32% Electrical & Electronic**
- 19% Production Management**
- 10% Communications & Radar**
- 11% Aviation Maintenance**
- 28% Other**



Source: LMI analysis of Defense Manpower Data Center data

Major Depot-Level Activities by Location

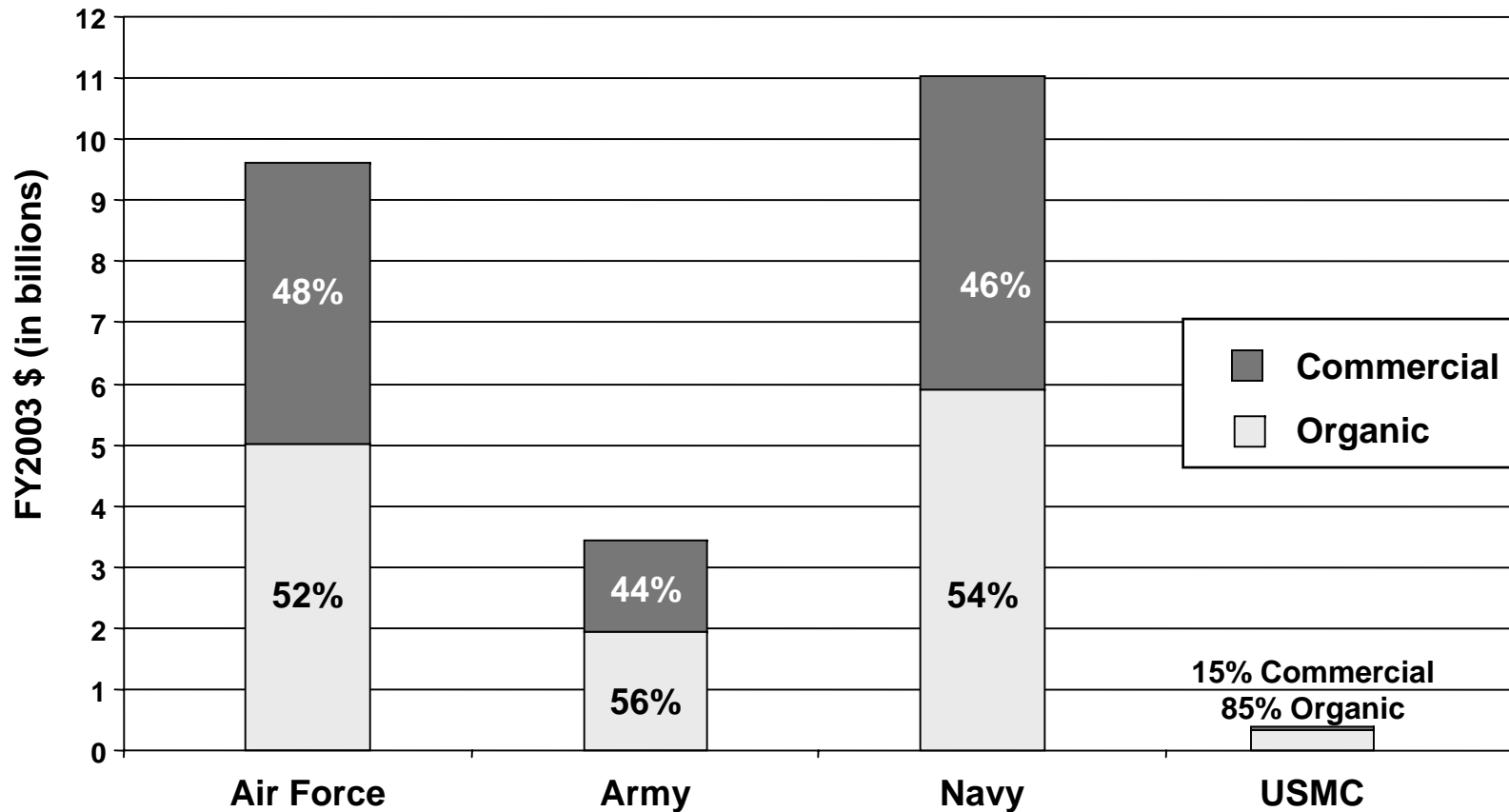
Depot
Maintenance



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

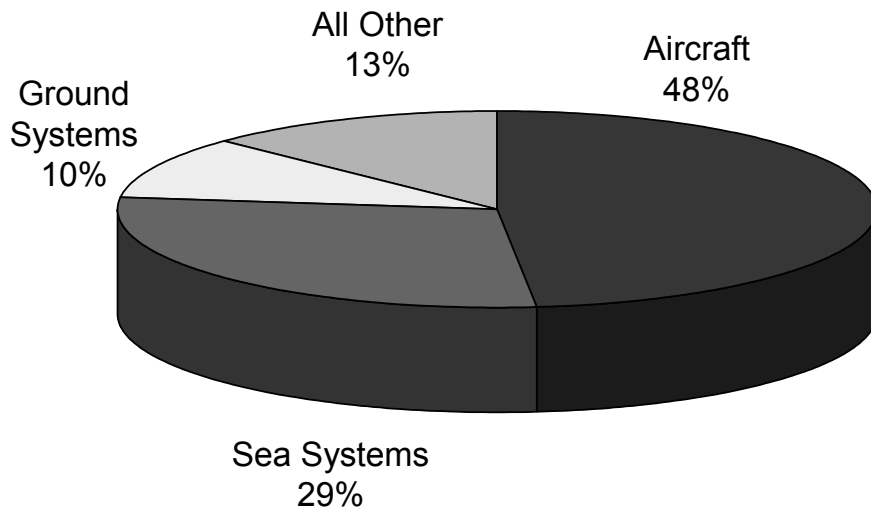


Source: USD(AT&L) *Distribution of DoD Depot Maintenance Workloads: FY2002 and FY2003*, February 2004

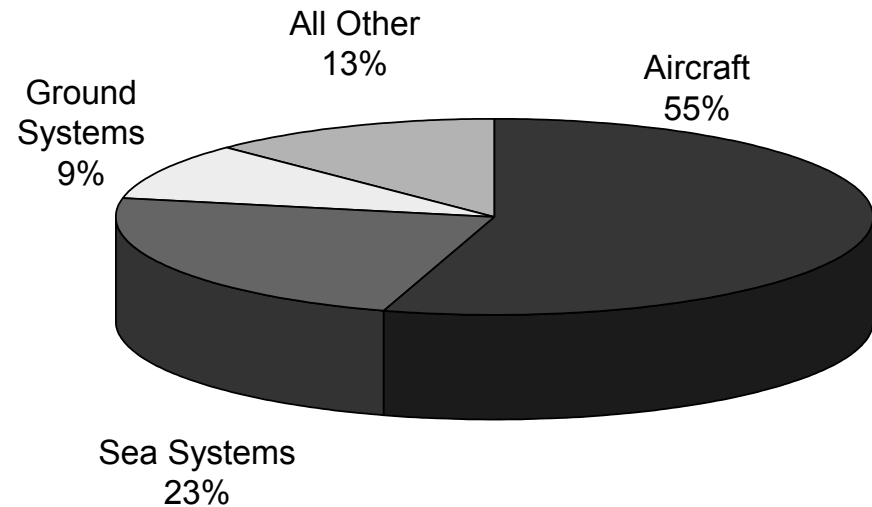
Workload Cost by Major System Category

Depot
Maintenance

**Depot Maintenance Performed by
DoD Organic Depots**



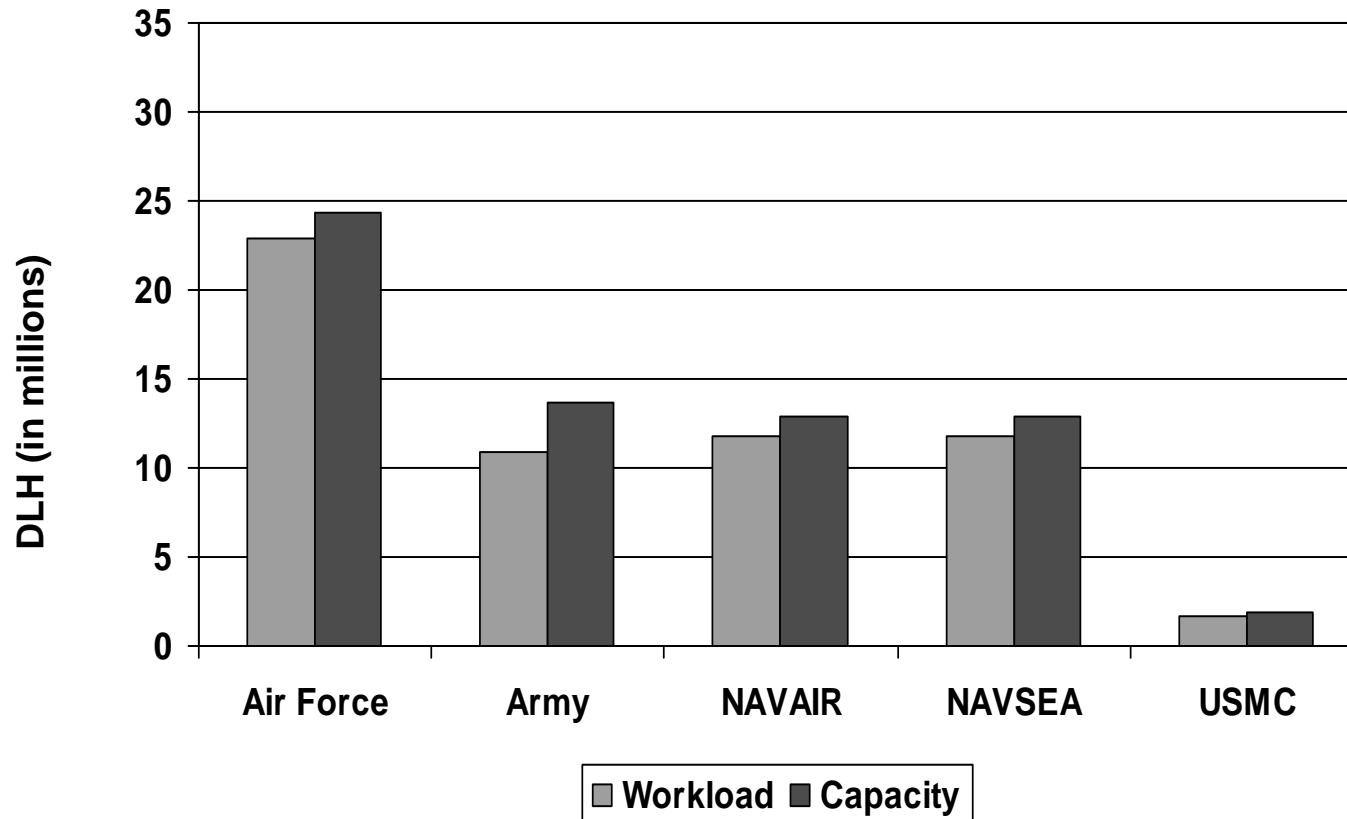
**Depot Maintenance Performed by
Defense Contractors**



Source: The Joint Group on Depot Maintenance, *Business Profile: FY2003–FY2009*, February 2004

Capacity Utilization of Organic Depot Maintenance

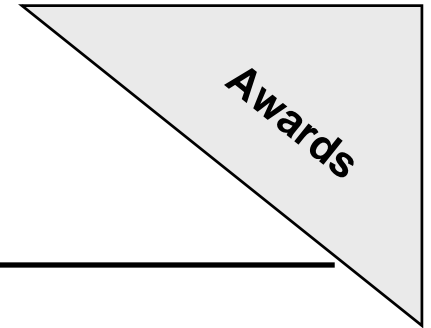
Overall Organic Depot Capacity Utilization: ~90%



Source: The Joint Group on Depot Maintenance, *Business Profile: FY2003–FY2009*, February 2004

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
- 74th 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



Awards

- 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

Acronyms

AIMD	Aircraft Intermediate Maintenance Detachment
AFB	Air Force Base
AD	Army Depot
ADUSD(MPP&R)	Assistant Deputy Under Secretary of Defense for Maintenance Policy, Programs, and Resources
ALC	Air Logistics Center
AMARC	Aerospace Maintenance and Regeneration Center
AVIM	Aviation Intermediate Maintenance
CBM+	Condition-Based Maintenance Plus
DDMC	Defense Depot Maintenance Council
DLA	Defense Logistics Agency
DLH	Direct Labor Hour
DMDC	Defense Manpower Data Center
DoD	Department of Defense
DS/GS	Direct Support/General Support
DUSD(L&MR)	Deputy Under Secretary of Defense for Logistics and Materiel Readiness
IETM	Interactive Electronic Technical Manual
IMF	Intermediate Maintenance Facility
JDMAG	Joint Depot Maintenance Activity Group
LP&P	Logistics Plans and Programs
LSM	Logistics Systems Management
MALS	Marine Aviation Logistics Squadron

Acronyms (Cont.)



Reference

MC	Maintenance Center
MXG	Maintenance Group
NAVAIR	Naval Air Systems Command
NAVSEA	Naval Sea Systems Command
NSWC	Naval Surface Warfare Center
NSY	Naval Shipyard
NUWC	Naval Undersea Warfare Center
OSD	Office of the Secretary of Defense
PP&E	Property, Plant, and Equipment
PPP	Public-Private Partnership
RCM	Reliability-Centered Maintenance
SCI	Supply Chain Integration
SIMA	Ship Intermediate Maintenance Activity
SPAWAR	Space and Naval Warfare Systems Command
TP	Transportation Policy
TRF	Trident Refit Facility (Navy)
USA	United States Army
USAF	United States Air Force
USD(AT&L)	Under Secretary of Defense for Acquisition, Technology, and Logistics
USMC	United States Marine Corps
USN	United States Navy
VFA	Strike Fighter Squadron

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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