



## DoD INSTRUCTION 4151.18

### DoD MAINTENANCE OF MILITARY MATERIEL

---

<b>Originating Component:</b>	Office of the Under Secretary of Defense for Acquisition and Sustainment
<b>Effective:</b>	August 30, 2024
<b>Releasability:</b>	Cleared for public release. Available on the Directives Division Website at <a href="https://www.esd.whs.mil/DD/">https://www.esd.whs.mil/DD/</a> .
<b>Reissues and Cancels:</b>	DoD Directive 4151.18, "Maintenance of Military Materiel," March 31, 2004
<b>Approved by:</b>	William A. LaPlante, Under Secretary of Defense for Acquisition and Sustainment

---

**Purpose:** In accordance with the authority in DoD Directive (DoDD) 5135.02, this issuance reissues the 2004 directive as a DoD instruction (DoDI) that establishes policy, assigns responsibilities, and provides procedures for the performance of DoD materiel maintenance across the entire life cycle, including maintenance of weapon systems, hardware, equipment, software, and data, or any combination thereof for both organic and contract sources of repair (referred to collectively in this issuance as "maintenance capabilities").

## TABLE OF CONTENTS

SECTION 1: GENERAL ISSUANCE INFORMATION .....	3
1.1. Applicability. ....	3
1.2. Policy. ....	3
SECTION 2: RESPONSIBILITIES .....	4
2.1. Assistant Secretary of Defense for Sustainment (ASD(S)). ....	4
2.2. Deputy Assistant Secretary of Defense for Materiel Readiness (DASD(MR)).....	4
2.3. DoD Component Heads. ....	4
SECTION 3: MAINTENANCE PROGRAMS AND CAPABILITIES .....	7
GLOSSARY .....	10
G.1. Acronyms. ....	10
G.2. Definitions.....	10
REFERENCES .....	14

## SECTION 1: GENERAL ISSUANCE INFORMATION

### 1.1. APPLICABILITY.

This issuance applies to OSD, the Military Departments, the Office of the Chairman of the Joint Chiefs of Staff and the Joint Staff, the Combatant Commands, the Office of Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational entities within the DoD (referred to collectively in this issuance as “DoD Components”).

### 1.2. POLICY.

It is DoD policy that:

a. The structure and resourcing of weapon system maintenance capabilities and programs will be both effective and efficient for meeting readiness objectives of national defense strategic and contingency requirements.

b. Weapon system maintenance programs will be planned, developed, managed, and documented concurrently with capability design, in accordance with DoDI 5000.88, to provide the best integrated product support outcomes at lowest cost.

c. Life cycle sustainment plans will include DoD maintenance plans pursuant to Sections 4251, 4252, 4323, and 4324 of Title 10, United States Code (U.S.C.) that identify and provide standards for the regular review of:

(1) Maintenance capabilities that restore materiel safety, reliability, and availability to required levels when deterioration has occurred.

(2) Depot maintenance core logistics capability requirements to directly support strategic and contingency plans as early as possible in the program life cycle.

d. DoD maintenance operations planning will minimize or prevent environmental, safety, and occupational health hazards.

## **SECTION 2: RESPONSIBILITIES**

### **2.1. ASSISTANT SECRETARY OF DEFENSE FOR SUSTAINMENT (ASD(S)).**

Under the authority, direction, and control of the Under Secretary of Defense for Acquisition and Sustainment, the ASD(S):

- a. Oversees implementation of policies and procedures for materiel readiness, including maintenance support of weapon systems and military equipment.
- b. Oversees maintenance policy and management for all weapon systems and military equipment maintenance programs and related resources within the DoD.
- c. Monitors the overall effectiveness and efficiency of DoD maintenance and materiel readiness systems and continually advocates for actions to improve readiness.
- d. Oversees and approves the development, coordination, publication, and upkeep of technical procedures for maintenance of military equipment and materiel readiness.

### **2.2. DEPUTY ASSISTANT SECRETARY OF DEFENSE FOR MATERIEL READINESS (DASD(MR)).**

Under the authority, direction, and control of the ASD(S), the DASD(MR):

- a. Advises, supervises, and develops policy for all DoD sustainment elements that relate to military maintenance requirements, capabilities, workloads, and materiel readiness.
- b. Develops policy to utilize, maintain, and assess the organic industrial base for maintenance capabilities critical to national security.
- c. Advises the Under Secretary of Defense for Acquisition and Sustainment and the ASD(S) on all aspects of acquisition and sustainment relating to core logistics capabilities pursuant to Section 2464 of Title 10, U.S.C.
- d. Manages periodic congressional reporting requirements, to include Sections 482, 2464, 2466, and 2476 of Title 10, U.S.C.

### **2.3. DOD COMPONENT HEADS.**

DoD Component heads:

- a. Establish policy and implementation guidance that relates to military maintenance requirements, capabilities, workloads, and materiel readiness in accordance with this issuance for all Component elements.

b. Adopt business practices and quality management programs and processes to continuously improve maintenance operations and production and to optimize cost savings and avoidance.

c. Direct Component compliance with depot maintenance expenditure limitations pursuant to Section 2466 of Title 10, U.S.C.

d. Comply with reporting requirements by:

(1) Providing data requested by the DASD(MR).

(2) Generating the information needed to congressional reporting requirements pursuant to Sections 482, 2464, 2466, and 2476 of Title 10, U.S.C.

(3) Maintaining operations security with data and reports indicating readiness or system vulnerabilities impacting, or potentially impacting, mission success and protecting against those vulnerabilities appropriately.

e. Minimize unutilized and underutilized plant capacity. Report depot maintenance capacity and utilization in accordance with DoD 4151.18-H.

f. Serve as decision authority for maintenance related requirements within acquisition programs.

(1) Verify that core logistics determinations occur for all acquisition programs and are reported pursuant to Section 4251 of Title 10, U.S.C.

(2) Oversee that:

(a) An estimate of the requirements for core logistics capabilities and associated sustaining workloads is made pursuant to Section 4252 of Title 10, U.S.C.

(b) Organic depot maintenance for inherently governmental and core logistics capability requirements is provided.

(c) Investments are made for organic depot maintenance capability and capacity to establish and support all depot source of repair (DSOR) decisions.

(d) The capabilities to support depot maintenance core requirements are established no later than 4 years after initial operational capability.

g. Supervise all aspects of the program life cycle related to maintenance of military materiel including logistics, maintenance, and materiel readiness.

h. Establish DSOR assignments for weapon systems that require depot maintenance. Incorporate DSOR results into the program Life Cycle Sustainment Plan and reflect assignments in product support strategies and plans in accordance with DoDI 4151.24.

- i. Establish policies that require all cannibalizations to be authorized, managed, and documented.
- j. Create reporting procedures for weapon systems that are not mission capable for extended periods.
- k. Document data collection and submission processes pursuant to reporting requirements contained within:
  - (1) Section 117 of Title 10, U.S.C.
  - (2) DoDD 7730.65.
  - (3) DoDI 3110.05.
- l. Develop and implement programs for the effective storage and reclamation of materiel withdrawn from operational use on a temporary or long-term basis. Structure programs to reduce maintenance requirements while preserving materiel capability. Require salvage and demilitarization operations to comply with environmental and industrial safety standards.
- m. Designate organic depot level maintenance activities as a center of industrial and technical excellence pursuant to Section 2474 of Title 10, U.S.C.
- n. Review field level and depot level maintenance workloads every 5 years after initial operational capability to improve materiel availability and reliability, increase operational availability rates, and reduce operation and sustainment costs pursuant to Section 4323 of Title 10, U.S.C.
  - (1) Identify opportunities for consolidation, regionalization, public-private partnerships, or other types of integrated support arrangements that will yield significant economies of operation while sustaining or improving responsiveness.
  - (2) Document the results from Paragraph 2.3.n. in statutory periodic 5-year sustainment reviews, product support business case analyses, and updated life cycle sustainment plans pursuant to Sections 4323 and 4324 of Title 10, U.S.C. and in accordance with DoDI 5000.91.

### **SECTION 3: MAINTENANCE PROGRAMS AND CAPABILITIES**

Managers of maintenance programs and capabilities will:

- a. Maximize effectiveness and efficiency to make the best possible use of available DoD and industry resources at the system, subsystem, and component levels.
- b. Employ the full range of maintenance support structures as applicable, including adaptive techniques such as organic or unique military capabilities, performance-based product support arrangements, commercial sector support, partnering, and competition.
- c. Minimize requirements for all support equipment pursuant to DoDI 5000.91. When use of support equipment may not be eliminated, standardize support equipment design for the broadest possible range of applications, consistent with maintenance concepts.
- d. Minimize the total life cycle cost of ownership and optimize the footprint of maintenance capabilities employed in an area of operation.
- e. Establish inter-Service depot maintenance agreements to execute associated inter-Service maintenance capabilities in accordance with DoDIs 4151.26 and 4000.19.
- f. Develop technical data and intellectual property strategies for sustainment before issuance of a contract solicitation for the weapon system, subsystem, or components in accordance with DoDI 5010.44.
  - (1) Evaluate long-term technical data needs of systems, subsystems, and components, and establish intellectual property management plans that provide technical data rights needed to sustain them over the entire life cycle.
  - (2) Include priced contract options for future delivery of technical data not acquired at initial contract award in the solicitation.
- g. Develop maintenance plans within the life cycle sustainment plans that provide the best possible product support outcomes at the lowest operation and support cost for both covered and non-covered systems.
- h. Manage and structure maintenance capabilities and programs to achieve inherent reliability, availability, safety, and maintainability levels for meeting readiness objectives of national defense strategic and contingency requirements.
- i. Address failure modes and effects using reliability centered maintenance analysis and allocate tasks to appropriate levels of maintenance (i.e., field and depot). Maintenance capabilities programs must utilize condition-based maintenance plus (CBM+) as a proactive maintenance strategy for achieving cost effective weapon system sustainment in accordance with DoDI 4151.22 and DoD Manual 4151.25 in embedded and off-equipment applications.

j. Invest in the development of new technologies to improve the reliability, availability, safety, and maintainability of DoD maintenance capabilities, including the cost, schedule effectiveness, and quality of maintenance tasks and processes.

k. Include comprehensive corrosion prevention and control programs that maximize system availability at the lowest life cycle cost. Maintenance reporting systems must enable collection of corrosion related preventive and corrective maintenance actions with sufficient reliability to be used to address corrosion prevention, control design, logistics considerations, and readiness issues.

l. Identify core logistics capability requirements and the workload to sustain those capabilities pursuant to Section 2464 of Title 10, U.S.C. and in accordance with DoDI 4151.20.

(1) Core logistics capabilities are fulfilled by establishing government-owned and government-operated repair capabilities to provide a ready and controlled source of technical competence including government personnel, equipment, and facilities.

(2) Capabilities are resourced and work loaded in peacetime, while preserving the surge capabilities necessary to support effective and timely responses to a mobilization, national defense contingency situations, and other emergency requirements.

m. Direct that workloads required to maintain core depot maintenance capabilities are not subject to cost studies in accordance with Office of Management and Budget Circular A-76 and document the justification for that direction.

n. Employ merit-based selection procedures to select depot maintenance source of repair assignments in accordance with DoDI 4151.24.

(1) Apply risk mitigation analysis and consider competitive factors such as cost, performance, and responsiveness to establish the best value to the government when choosing sources of repair for depot maintenance workloads that are above core and non-core logistics capabilities sustaining workloads.

(2) Consider opportunities to combine similar requirements when assigning workloads at the organic, contract, inter-Service sources of repair, or combinations thereof.

o. Require performance of an organic DoD depot level maintenance workload with a value of at least \$3 million not to be changed to performance by a contractor or another DoD organic activity unless the change is made using:

(1) Merit-based selection procedures for competitions among all organic depot level DoD activities; or

(2) Competitive procedures for competitions among private and public sector entities pursuant to Section 2469 of Title 10, U.S.C.

p. Equip DoD materiel with automated identification technology to allow paperless identification, minimize data entry requirements, and ease digital storage and retrieval of



essential information and maintenance history. Employ serialized item management techniques to manage select items throughout their life cycle.

q. Support use of effective management information at all levels that include financial, scheduling, production control, and quality of maintenance.

(1) DoD maintenance activities must be supported by meaningful financial management information such as determining the costs of ownership, costs of alternate sources of repair, and make-or-buy decisions. Job order cost accounting must be used for all depot maintenance operations and used for other maintenance, as appropriate.

(2) DoD depot maintenance activities must follow the cost accounting requirements identified in Volume 11B of DoD 7000.14-R, regardless of the funding source.

(3) DoD Components must report depot maintenance cost and production information regardless of the source of funding or the activity accomplishing the work as required by Volume 6A of DoD 7000.14-R. This includes all depot maintenance that is contractor provided, performed under contractor logistics support agreements, and provided through partnership arrangements.

r. Collect and analyze maintenance related reliability, availability, safety, and maintainability data and leverage common data standards and transmission across weapon systems. The maintenance programs must:

(1) Include sufficient analytic capability for identifying necessary adjustments based on:

(a) Operating experience, materiel condition, and requirements for reliability, availability, safety, and maintainability modifications.

(b) Changes to training curricula or delivery methods.

(2) Establish and evaluate performance metrics that promote continuous improvement in maintenance, ensuring responsiveness and best value to operating forces.

s. Recognize outstanding achievements in military equipment and weapon system maintenance by maintenance organizations of DoD Components through the Secretary of Defense Maintenance Awards Program in accordance with DoDI 1348.30.

## GLOSSARY

### G.1. ACRONYMS.

ACRONYM	MEANING
ASD(S)	Assistant Secretary of Defense for Sustainment
CBM+	condition-based maintenance plus
DASD(MR)	Deputy Assistant Secretary of Defense for Materiel Readiness
DoDD	DoD directive
DoDI	DoD instruction
DSOR	depot source of repair
U.S.C.	United States Code

### G.2. DEFINITIONS.

These terms and their definitions are for the purpose of this issuance.

TERM	DEFINITION
<b>automated identification technology</b>	A suite of technologies that automatically captures data, thereby enhancing the ability to identify, track, document, and control assets (e.g., materiel) and deploying forces, equipment, personnel, and sustainment cargo. It includes a variety of data storage or carrier technologies, such as linear bar codes, two-dimensional symbols, magnetic strips, integrated circuit cards, optical laser discs, or satellite tracking transponders and radio frequency transponders.
<b>cannibalization</b>	The taking of an assembly, subassembly, component, or part from a serviceable or unserviceable item that has not been inducted for maintenance, without regard to its location or ownership, by a maintenance activity for use on an item that has been inducted for maintenance.
<b>capacity</b>	The projected amount of output that a product shop or activity can produce in the product mix that it is designed to accommodate.

<b>TERM</b>	<b>DEFINITION</b>
<b>CBM+</b>	A DoD initiative focused on the development and implementation of data analysis and sustainment technology capabilities to improve weapon system availability and achieve optimum costs across the enterprise. CBM+ is the application and integration of processes, technologies, and knowledge-based capabilities to improve reliability and maintenance effectiveness of DoD systems and components. CBM+ diminishes life-cycle costs by reducing unscheduled maintenance and enabling predictive maintenance. CBM+ is maintenance performed based on evidence of need.
<b>center of industrial and technical excellence</b>	A designation that recognizes an activity or facility for its core competencies. This designation allows the activity or facility to re-engineer industrial processes and enables the best use of public and private sector capabilities.
<b>core logistics capability requirements</b>	The depot maintenance capability including personnel, equipment, and facilities maintained by the DoD at government-owned and government-operated facilities as the ready and controlled source of technical competence and resources necessary to provide effective and timely response to a mobilization, national defense contingency situations, and other emergency requirements.
<b>core logistics sustaining workload</b>	Depot level maintenance and repair work necessary to provide technical competence in peacetime while preserving the surge capacity and reconstitution capabilities necessary to fully support DoD strategic and contingency requirements.
<b>corrosion</b>	The deterioration of a material or its properties due to a reaction of that material with its chemical environment.
<b>depot maintenance</b>	<p>The processes of materiel maintenance or repair involving the overhaul, upgrading, rebuilding, testing, inspection, and reclamation (as necessary) of weapon systems, equipment end items, parts, components, assemblies, and subassemblies.</p> <p>Depot maintenance also includes all aspects of software maintenance; installation of parts or components for modifications; and technical assistance to operational units, intermediate maintenance organizations, and other activities.</p>

<b>TERM</b>	<b>DEFINITION</b>
<b>field level maintenance</b>	<p>Maintenance intended to return systems rapidly to users in a ready status. It encompasses the organizational and on-system maintenance and repairs necessary for day-to-day operations, as well as the intermediate, off-system repair of components and end items for weapon systems and supply chains.</p> <p>Field level maintenance is less complex than depot level maintenance and serves as the link between strategic capabilities and tactical requirements.</p>
<b>inherent availability</b>	<p>Availability of a system with respect only to operating time and corrective maintenance.</p>
<b>inherent reliability</b>	<p>The level of reliability that is established by the design and manufacturing process of a weapon system or equipment.</p>
<b>initial operational capability</b>	<p>The first attainment of the capability to effectively employ a weapon, item of equipment, or system of approved specific characteristics that is manned or operated by an adequately trained, equipped, and supported military unit or force.</p>
<b>job order cost accounting</b>	<p>An accounting method that accumulates costs for individual items or lots. A job may be a service, such as the repair of equipment, or a manufactured item.</p>
<b>maintenance capabilities</b>	<p>Includes but is not limited to overhaul, rework, rebuild, progressive maintenance, preventive servicing, recondition, phased incremental maintenance, conversion, activation, analytical inspection, repair, inactivation, renovation, modification, inspection, manufacture, reclamation, storage, technical assistance, software maintenance, calibration, contracted logistics support, interim contract support, performance-based product support, and similar contracts.</p>
<b>maintenance program</b>	<p>The overall maintenance planning and management development process that defines the repair and upkeep tasks, schedule, and resources required to sustain a weapons system with the focus on defining the actions and support necessary to attain the system's operational availability objective.</p>
<b>make-or-buy decision</b>	<p>A decision to determine whether a product should be manufactured in-house or purchased from an external supplier.</p>

<b>TERM</b>	<b>DEFINITION</b>
<b>performance-based product support</b>	Product support acquired through performance-based arrangements that deliver warfighter requirements and incentivize providers to reduce costs through innovation. These arrangements are contracts with industry or inter-governmental agreements. Sources of support may be organic, commercial, or a combination with a focus on optimizing customer support, availability, and reduced ownership costs.
<b>product support</b>	The package of support functions required to field and maintain the readiness and operational capability of systems, subsystems, and components, including all functions related to system readiness.
<b>program life cycle</b>	The relationship between the acquisition phases and work efforts and key program events such as decision points and reviews. The life cycle process takes the program through research, development, production, deployment, operations, support, upgrade, and demilitarization and disposal.
<b>serialized item management</b>	Programs and techniques that use life cycle item management data to track the performance of uniquely identified items throughout their life cycle. The overarching goal of these programs and techniques is to enable managers to achieve optimum weapon system materiel availability at the best total ownership cost using effective and efficient life cycle management practices.
<b>sustainment review</b>	An assessment of the product support strategy, performance, and operating and support costs of a covered system in accordance with Section 4323 of Title 10, U.S.C.
<b>utilization</b>	A measure of the actual output that a product shop or activity produces in the product mix that it is designed to accommodate.

## REFERENCES

- DoD 4151.18-H, “Depot Maintenance Capacity and Utilization Measurement Handbook,” March 10, 2007, as amended
- DoD 7000.14-R, Volume 6A, “Department of Defense Financial Management Regulation (FMR): Reporting Policy,” July 2020
- DoD 7000.14-R, Volume 11B, “Department of Defense Financial Management Regulation (FMR): Reimbursable Operations Policy – Working Capital Funds (WCF),” April 2022
- DoD Directive 5135.02, “Under Secretary of Defense for Acquisition and Sustainment (USD(A&S)),” July 15, 2020
- DoD Directive 7730.65, “DoD Readiness Reporting System,” May 31, 2023
- DoD Instruction 1348.30, “Secretary of Defense Maintenance Awards,” April 8, 2019
- DoD Instruction 3110.05, “Sustainment Health Metrics in Support of Materiel Availability,” April 24, 2024
- DoD Instruction 4000.19, “Support Agreements,” December 16, 2020
- DoD Instruction 4151.20, “Depot Maintenance Core Capabilities Determination Process,” May 4, 2018, as amended
- DoD Instruction 4151.22, “Condition-Based Maintenance Plus for Materiel Maintenance,” August 14, 2020
- DoD Instruction 4151.24, “Depot Source of Repair Assignment Determination Process,” November 7, 2023
- DoD Instruction 4151.26, “DoD Inter-Service Depot Maintenance,” October 31, 2022
- DoD Instruction 5000.88, “Engineering of Defense Systems,” November 18, 2020
- DoD Instruction 5000.91, “Product Support Management for the Adaptive Acquisition Framework,” November 4, 2021
- DoD Instruction 5010.44, “Intellectual Property (IP) Acquisition and Licensing,” October 16, 2019
- DoD Manual 4151.25, “Reliability Centered Maintenance (RCM),” August 31, 2018, as amended
- Office of Management and Budget Circular No. A-76, “Performance of Commercial Activities,” August 4, 1983, as amended
- United States Code, Title 10