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**\*Army Regulation 70–47**

Effective 27 April 2024


**Research, Development, and Acquisition  
Engineering for Transportability Program**

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By Order of the Secretary of the Army:

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*General, United States Army  
Chief of Staff*

Official:

  
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Secretary of the Army*

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**History.** This publication is an expedited revision. The portions affected by this expedited revision are listed in the summary of change.

**Authorities.** This regulation implements DoDD 4510.11.

**Applicability.** This regulation applies to the Regular Army, the Army National Guard/Army National Guard of the United States, and the U.S. Army Reserve, unless otherwise stated.

**Proponent and exception authority.** The proponent of this regulation is the Assistant Secretary of the Army (Acquisition, Logistics and Technology). The proponent has the authority to approve exceptions or waivers to this regulation that are consistent with controlling law and regulations. The proponent may delegate this approval authority, in writing, to a division chief within the proponent agency or its direct reporting unit or field operating agency, in the grade of colonel or the civilian equivalent. Activities may request a waiver to this regulation by providing justification that includes a full analysis of the expected benefits and must include formal review by the activity's senior legal officer. All waiver requests will be endorsed by the commander or senior leader of the requesting activity and forwarded through their higher headquarters to the policy proponent. Refer to AR 25–30 for specific requirements.

**Army internal control process.** This regulation contains internal control provisions in accordance with AR 11–2 and identifies key internal controls that must be evaluated (see appendix C).

**Suggested improvements.** Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to [usarmy.pentagon.hqda-asg-alt.mbx.asg-alt-publication-updates@army.mil](mailto:usarmy.pentagon.hqda-asg-alt.mbx.asg-alt-publication-updates@army.mil).

**Distribution.** This regulation is available in electronic media only and is intended for the Regular Army, the Army National Guard/Army National Guard of the United States, and the U.S. Army Reserve.

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\*This publication supersedes AR 70–47, dated 11 January 2019.

# ***SUMMARY of CHANGE***

AR 70–47

Engineering for Transportability Program

This expedited revision, dated 27 March 2024—

- Adds records management statement (para 1–5).
- Adds purpose of the AR 70–47 and program overview to include engineering change proposal and system enhancement packages (para 1–6).
- Updates roles and responsibilities (paras 1–7, 1–9, 1–10, and 1–11).
- Adds additional testing requirements (paras 2–7*d* and 2–7*e*).
- Updates transportability approval authority for major capability acquisition program and approvals for middle tier acquisition (para 2–9.)

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## **Chapter 1**

### **Introduction**

#### **Section I**

##### **General**

#### **1–1. Purpose**

This regulation sets policy for the Engineering for Transportability Program, requirements for transportability assessment, and approvals for transportability problem items (TPIs). TPIs are materiel in its shipping configuration which, because of its size, weight, fragile, or hazardous characteristics or lack of adequate means for lifting and tiedown, will be denied movement, will require special permits or waivers and special equipment or handling, or will be unacceptably delayed when moving within existing or newly designed transportation systems. All new systems, major modifications, upgrades to current systems to include major engineering change proposals and system enhancement packages, nondevelopmental items, commercial items, and reprocurments designated as TPIs must obtain transportability approval from the Military Surface Deployment and Distribution Command Transportation Engineering Agency (SDDCTEA) per DoDI 4540.07 and AR 70–1.

#### **1–2. References, forms, and explanation of abbreviations**

See appendix A. The abbreviations, brevity codes, and acronyms (ABCAs) used in this electronic publication are defined when you hover over them. All ABCAs are listed in the ABCA directory located at <https://armypubs.army.mil/>.

#### **1–3. Associated publications**

This section contains no entries.

#### **1–4. Responsibilities**

Responsibilities are listed in section II of chapter 1.

#### **1–5. Records management (recordkeeping) requirements**

The records management requirement for all record numbers, associated forms, and reports required by this publication are addressed in the Records Retention Schedule–Army (RRS–A). Detailed information for all related record numbers, forms, and reports are located in Army Records Information Management System (ARIMS)/RRS–A at <https://www.arims.army.mil>. If any record numbers, forms, and reports are not current, addressed, and/or published correctly in ARIMS/RRS–A, see DA Pam 25–403 for guidance.

#### **1–6. Transportability Program overview**

This regulation—

- a. Applies to all Army materiel (major end items, components, and spare parts) to include research, development, test, and evaluation (RDT&E) systems; product improvements (including materiel modifications, upgrades, and design changes); commercial items and military-adapted commercial items; foreign source items; nondevelopmental items; rapidly fielded equipment; reprocurments; and systems/equipment/munitions (SEM).
- b. Assigns responsibilities and prescribes procedures for the Engineering for Transportability Program.
- c. Provides Army materiel developer (MATDEV) and capability developer (CAPDEV) guidance and procedures for use during the materiel acquisition process. These procedures assure that all Army materiel (major end items, components, and spare parts) to include: RDT&E systems; product improvements (which includes engineering change proposals and system enhancement packages); commercial items and military-adapted commercial items; foreign source items; nondevelopmental items; rapidly fielded equipment; reprocurments; and SEM, are acquired, designed, engineered, and constructed so that required quantities can be moved efficiently by existing and planned transportation assets.
- d. Implements requirements as set forth in DoDD 4510.11, DoDI 4540.07, DoDD 5000.01, DoDI 5000.02, and DoDI 5000.80.

e. Designates that Army materiel, regardless of its condition (for example, a battle-damaged item), is considered a TPI when specific conditions apply (see TPI in the glossary terms section for applicable conditions).

f. Defines a transportability nonproblem item (NPI) as Army materiel that does not qualify as a TPI. An example of an NPI is a vehicle that already has a transportability approval and only a radio is being updated within the vehicle. In this example, a new transportability approval is not required. NPIs do not require a transportability approval. However, if a system is determined to be a NPI, SDDCTEA will provide a NPI statement (an email and an attached NPI memorandum) to the MATDEV upon request. If design changes are made to a NPI that result in it becoming a TPI, any NPI statement provided by SDDCTEA for the system previously will become invalid and the transportability approval process in this regulation must be followed.

## **Section II**

### **Responsibilities**

#### **1–7. Assistant Secretary of the Army (Acquisition, Logistics and Technology)**

The ASA (ALT) will—

- a. Establish policy and provide oversight for the Army's Engineering for Transportability Program.
- b. Ensure MATDEVs give adequate consideration of transportability during RDT&E of acquired materiel systems by coordinating with and integrating SDDCTEA into the decision process to inform decisions to delay transportability approval beyond Milestone (MS) C. This coordination will include requesting applicable transportability assessments or statement before approving delay decisions. In all cases where delays to SDDCTEA transportability approval beyond MS C are approved, the milestone decision authority (MDA) must evaluate and accept risk to program cost, schedule, and performance.
- c. Designate the Deputy Assistant Secretary of the Army for Sustainment (DASA (S)) as the approval authority for program exemptions from transportability approval requirements under paragraph 2–9, for programs where the Army Acquisition Executive is the MDA.
- d. Designate the program executive office as the approval authority for exemptions to paragraph 2–9, for programs where they serve as the MDA.
- e. Determine, in cooperation with the U.S. Air Force (USAF) and the U.S. Army Training and Doctrine Command (TRADOC), detailed rigging procedures to be used by the Army for airdrop of materiel.
- f. Determine, in cooperation with the USAF Air Transportability Test Loading Activity (ATTLA) and TRADOC, procedures to disassemble, load, restrain, and offload materiel for internal air transport for fixed-wing aircraft.
- g. Develop trial rigging equipment procedures and instructions for internal Army helicopter air transport or external helicopter sling loading.
- h. Develop blocking, bracing, slinging, lifting, and tiedown procedures to assure safe, economical, logistical, and tactical transport.
- i. Conduct developmental tests to demonstrate the degree to which requirements and procedures have been met for—
  - (1) Airdrop for ancillary airdrop equipment.
  - (2) Internal air transport of materiel (disassemble, load, restrain, and offload materiel).
  - (3) Internal Army helicopter air transport or external helicopter sling loading trial rigging equipment.
  - (4) Blocking, bracing, slinging, lifting, and tiedown.
  - (5) Materiel for containerization.
- j. Conduct testing and validation on transportability of equipment/systems to be transported aboard lighterage, Army intra-theater sealift transport platforms, and marine amphibious craft.
- k. Provide land transportability testing when requested by other Department of Defense (DoD) transportability agents.
- l. Develop and obtain approval for out-loading drawings for ammunition commodities and missile and rocket ground support equipment.
- m. Coordinate with SDDCTEA if commercial items require modification or special securing equipment to meet transportability requirements, including those necessary for logistics-over-the-shore (LOTS) and airborne operations.

**1–8. Assistant Secretary of the Army (Installations, Energy and Environment)**

The ASA (IE&E) will ensure that environmental and facility considerations impacting this policy are coordinated with the ASA (ALT).

**1–9. Chief, National Guard Bureau**

The CNGB will provide support to the CAPDEVs in developing transportability requirements that are peculiar to the National Guard Bureau mission.

**1–10. Deputy Chief of Staff, G–3/5/7**

The DCS, G–3/5/7 will assure that materiel requirements documents consider transportability before approval.

**1–11. Deputy Chief of Staff, G–4**

The DCS, G–4 will review the Engineering for Transportability Program policy for impact to distribution operations.

**1–12. Chief, Army Reserve**

The CAR will provide support to the CAPDEVs in developing transportability requirements that are peculiar to Army Reserve mission.

**1–13. Commanding General, U.S. Army Futures Command**

The CG, AFC will ensure transportability requirements are clearly stated in materiel capability documents, coordinated with SDDCTEA. Requirements in capability and acquisition documents will be aligned to avoid conflicts. Specific transportability types and special requirements will be explicitly stated in capability documents.

a. Develop a command awareness of the Engineering for Transportability Program.

b. The CG, U.S. Army Combat Capabilities Development Command-Soldier Center (DEVCOM–SC) will—

(1) Provide engineering and design support for aerial delivered materiel from fixed-wing aircraft and transported by tilt-rotor or rotary-wing aircraft. Act as the subject matter expert for aerial delivered cargo and rotary-wing aircraft sling load operations across the DoD.

(2) Issue official certifications for materiel to be aerial delivered from fixed-wing aircraft and internally or externally transported by tilt-rotor or rotary-winged aircraft.

(3) Provide aerial delivery and rotary-wing aircraft certifications to SDDCTEA.

(4) Provide shelter certifications for standard rigid wall shelters as approved by the Joint Standardization Board for Expeditionary Shelters and Basing Equipment (website (<https://www.dsp.dla.mil>)), which must also approve the use of nonstandard shelters.

c. The CG, U.S. Army Test and Evaluation Command (ATEC), will—

(1) Manage the Army's continuous comprehensive evaluation and user testing programs.

(2) Develop test and evaluation master plans (TEMPs) to include appropriate testing to validate transportability requirements identified in TPI requirements documents.

(3) Conduct developmental transportability testing in accordance with MIL–STD–209 and MIL–STD–810 (Test Method 526) as required to ensure compliance with transportability requirements.

d. Identify all materiel that qualifies as a TPI.

**1–14. Commanding General, U.S. Army Training and Doctrine Command**

a. The CG, TRADOC will—

(1) Validate transportability requirements to ensure compliance with appropriate doctrine.

(2) Assign transportability engineering focal points for TRADOC.

(3) Request as necessary a transportability assessment of materiel under development and/or change during concept development.

(4) Provide tentative basis of issue plan and data on selected systems to SDDCTEA in support of unit deployability studies.

(5) Determine need for operational aerial delivery testing to include low velocity aerial delivery (LVAD), internal air transport, and helicopter sling load for validation of trial procedures.

(6) Publish transport procedures and prepare adequate training courses and material(s) to ensure Soldier understanding of loading, tiedown, blocking, bracing and any other requirements associated with TPI.

b. Commandant, U.S. Army Ordnance School, will ensure the Director, U.S. Army Defense Ammunition Center and School will—

(1) Coordinate with SDDCTEA on the transportability of ground support equipment.

(2) Develop blocking, bracing, slinging, lifting, and tiedown procedures for ammunition and explosives to assure safe, economical, logistical, and tactical transport.

(3) Conduct developmental tests to demonstrate the degree to which requirements and procedures have been met for ammunition and explosives blocking, bracing, slinging, lifting, and tiedown.

(4) Prepare, coordinate, and submit for publication, training literature on transport procedures for tactical unit movement of organic unit materiel.

c. Commandant, U.S. Army Quartermaster School, will publish approved rigging procedures for rotary-wing aircraft sling load operations, aerial delivery operations, and internal air transport (except nuclear) operations.

### **1–15. Commanding General, U.S. Army Materiel Command**

The CG, AMC will—

a. Assist SDDCTEA in the collection of transportability characteristics data for Army end items of equipment for inclusion in TB 55–46–1.

b. Furnish SDDCTEA the transportability characteristics data for all items of equipment under AMC management for inclusion in TB 55–46–1.

c. Notify SDDCTEA of changes in materiel dimensions or weight resulting from product improvements and modifications.

d. Ensure the CG, Army Sustainment Command, Director, Packaging, Storage, and Containerization Center serves as the AMC focal point for the transportability packaging program for NPIs.

e. Designate the CG, Military Surface Deployment and Distribution Command (SDDC), by the Secretary of the Army per DoDI 4540.07 to serve as the Army Transportability Agent. Additionally, designate the Director, SDDCTEA, by the Commander, U.S. Transportation Command per DoDD 4510.11 to serve as the Special Assistant for Transportation Engineering. The SDDCTEA serves as the DoD Secretariat for the Engineering for Transportability and Deployability Program, the maintainer of appropriate transportability Military Standards, and the DoD Land Mode Transportability Agent, and will—

(1) Serve as the single point of contact for Army agencies in providing transportability engineering analysis and assistance, securing test loadings, and obtaining transportability certifications/approvals, statements, and assessments from the other Services.

(2) Conduct a transportability assessment for each TPI, if applicable. This assessment necessitates the submission of a minimum MATDEV transportability report to SDDCTEA. It is also essential to inform the Testing Integrated Working Group for TPIs to shape the testing strategy for middle-tier acquisition (MTA) programs (refer to AR 73–1). Major capability acquisition programs seeking delay of transportability approval until after MS C must undergo the transportability assessment.

(3) Evaluate TPIs for transportability requirements and issue transportability approvals to Army agencies for major capability acquisition programs at MS C. Transportability approvals for MTA programs are necessary either at outcome determination or as early as possible before fielding.

(4) Conduct unit deployability studies, when requested.

(5) Review justification of major system new starts, operational and organizational plans, letters of agreement, letters of requirement, Joint Capability Integration and Development System capability documents, operational needs statements, Joint urgent operational need statements, specifications, and other requirements documents, such as the capability development document or capabilities production document. This review will assure that the transportability and transportation requirements are sufficiently addressed for systems to meet their mission and deployment requirements (see AR 71–9).

(6) Convene meetings of Army transportability engineering and other Services' transportability focal points, arrange for working groups to resolve problems, and provide guidance, as required.

(7) Provide transportability assistance to special task forces, special study groups, or ad hoc groups assembled for system acquisition in accordance with AR 71–9.

(8) Provide a representative to support MATDEVs with source selection evaluation boards and in-process reviews (IPRs) for materiel systems that are TPIs, as requested.

- (9) Coordinate with DoD transportability agents to ensure Army requirements are considered for transportation systems under the DoD agents' control.
- (10) Review transportability sections of TEMP's and materiel fielding plans for materiel that is a TPI to ensure that transportability testing is scheduled, as needed, to support the approval process.
- (11) Prepare and distribute transportability modal instructions in accordance with AR 25–30.
- (12) Validate, in cooperation with the USAF ATTLA, the requirements of special assignment airlift missions required for air transportability test loadings.
- (13) Provide DoD representation on the Association of American Railroads' Open Top Car Loading Rules Committee.
- (14) Provide transportability engineering assistance and service to Army commands and agencies and to other DoD components.
- (15) Manage data collection and data input in the Standard Characteristics For Transportability of Military Vehicles and Other Outsize/Overweight Equipment (see TB 55–46–1). Online reference is the Joint Equipment Characteristics Database which resides at: <https://www.sddc.army.mil>.
- (16) In coordination with the USAF, maintain and publish current listing of Army, USAF, and U.S. Marine Corps equipment certified for transport in the USAF Air Mobility Command and Civil Reserve Air Fleet aircraft (see TB 55–46–1).
- (17) Obtain air certification of TPIs from USAF ATTLA as needed.
- (18) Provide transportability assessments and statements as needed or requested by MATDEVs.
- (19) Provide advice to the ASA (ALT) on transportability considerations and problems at Army Systems Acquisition Review Council reviews and IPRs when the materiel is considered a TPI as requested.

#### **1–16. Materiel developers**

MATDEVs are responsible for ensuring transportability requirements are considered in all phases of development and that materiel systems are designed, engineered, and constructed in accordance with the requirements of the Engineering for Transportability Program. MATDEVs will—

- a. Establish internal procedures and controls to implement this policy.
- b. Assign transportability engineering focal points for the MATDEV.
- c. Identify all materiel that qualifies as an NPI. SDDCTEA will assist the MATDEV with the NPI determination as needed. The MATDEV should provide an explanation of the system and key physical characteristics to SDDCTEA and request that SDDCTEA provide a NPI statement to support a milestone decision. SDDCTEA will provide the NPI statement (an email and an attached NPI memorandum) to the MATDEV that identifies the NPI.
- d. Obtain transportability approval from SDDCTEA for rapidly fielded equipment items that are a TPI.
- e. Prepare and submit a MATDEV transportability report for TPIs to SDDCTEA and request a transportability assessment as required and transportability approval from SDDCTEA (see AR 70–1).
- f. Schedule and fund developmental tests of new or improved materiel to identify deficiencies and ensure compliance with transportability requirements.
- g. Monitor TPIs until deficiencies are corrected which demonstrates compliance to transportability requirements resulting in SDDCTEA issuing a transportability approval.
- h. Provide support to SDDCTEA in development and update of SDDCTEA transportability modal instructions.
- i. Request SDDCTEA provide a representative to support source selection evaluation boards and IPRs for materiel systems that are TPIs as needed.
- j. Incorporate transportability test requirements for TPIs in the TEMP in coordination with the CAPDEV, operational tester, Army life cycle logistician, and SDDCTEA.
- k. Provide logistics management information related to transportability and transportation to SDDCTEA for update of the Department of the Army (DA) master file of standard equipment characteristics to support a low rate initial production decision (see AR 700–127).
- l. If applicable, develop, document, and obtain approval of approved shipping configurations through packaging validation testing in accordance with AR 700–15.
- m. Determine special operating and transport characteristics of items that are unique to various types of Army units.
- n. Coordinate with ATEC on conducting lifting and tiedown tests that meet requirements in MIL–STD–209 and rail impact tests that meet the requirements in MIL–STD–810, as needed, as determined by SDDCTEA.



- o. Provide support and engineering data to the DEVCOM–SC for materiel to be air dropped from fixed-wing aircraft, internally or externally transported by rotary-wing aircraft, tilt-wing aircraft, and/or materiel that contains a rigid wall, nonstandard, or modified shelter.
- p. Provide support and engineering data to the USAF ATTLA for materiel to be transported by fixed-wing aircraft.
- q. Ensure transportability characteristics and procedures provided in the SDDCTEA transportability approval for the TPI are included in item preparation, loading, securing, and unloading procedures for shipment of the item by all appropriate modes of transport. Include all data and procedures in the equipment technical manuals.
- r. Ensure that strategic and tactical transportability requirements (including modal requirements) are adequately stated in materiel acquisition documents and are coordinated with SDDCTEA and the CAPDEV. Requirements in acquisition documents must reflect the requirements in the capability documents to prevent conflict and confusion. The required type of transportability (worldwide road, rail, air, sealift) together with any special requirements for airdrop and tactical transport will be explicitly stated in the purchase descriptions and in item specifications.
- s. Ensure transportability is reviewed and updated, if applicable prior to the system transitioning to sustainment.

## **Chapter 2**

### **Transportability Engineering in the Acquisition Process**

#### **2–1. Transportation program requirements**

- a. Transportability is a critical element of strategic and tactical deployment. Developing transportable equipment and combat resources that comply with this regulation will be an integral part of the acquisition process. Transportability requirements will be a primary design consideration by MATDEVs. The following requirements supplement those in DoDI 4540.07:
  - b. Materiel will, as appropriate—
    - (1) Be designed for transport in USAF Air Mobility Command prime mission cargo aircraft when there is a fixed-wing air transport requirement (see MIL–STD–1791). Materiel limited to C–5 aircraft requires approval by appropriate Headquarters, DA staff elements.
    - (2) Meet State and Federal legal and operational standards for the design and use of public highways.
    - (3) Except for equipment that does not carry its payload during transport (such as wreckers, dump trucks, and material handling equipment), the item will be designed (or procured) to carry their rated payload during all of its required transport modes (worldwide road, rail, air, sealift). Items with capability requirements documents that state it does not carry a payload during transport are also exempt.
    - (4) Have a transportability and/or shipping data plate that will show tiedown and lifting points, locations, and strengths, and the location of the center of gravity (see MIL–STD–209).
    - (5) Comply with transportability criteria prescribed in MIL–STD–1791 and MIL–STD–1366.
    - (6) Comply with slinging and tiedown criteria prescribed in MIL–STD–209 and MIL–STD–913.
    - (7) Comply with airdrop criteria prescribed in MIL–STD–814 and MIL–HDBK–669.

#### **2–2. Coordination**

The following coordination will be performed for TPIs:

- a. CAPDEVs, MATDEVs, testers, logisticians, and users will coordinate with SDDCTEA to ensure transportability considerations are assessed and ensure that requirements are met. Correspondence will be forwarded to Director, SDDCTEA (DPE), 1 Soldier Way, Scott Air Force Base (AFB), IL 62225–5006 or [usarmy.scott.sddc.mbx.tea-dpe@mail.mil](mailto:usarmy.scott.sddc.mbx.tea-dpe@mail.mil) for—
  - (1) Transportability guidance.
  - (2) MATDEV transportability reports.
  - (3) Requests for transportability approvals, assessments, or statements.
  - (4) Requests regarding technical and operational matters pertaining to the day-to-day operations of the Engineering for Transportability Program.
  - (5) Requests for new or modified rail securement loading drawings to be considered by the Association of American Railroads Open Top Loading Rules Committee.
  - (6) Assistance with transportability engineering and design for materiel to be transported in USAF aircraft and coordination with USAF ATTLA to obtain USAF air certification.

b. CAPDEVs and MATDEVs will coordinate with the Commanding General, DEVCOM–SC, Natick, MA 01760–5000 to obtain engineering and design assistance for certification of materiel to be airdropped from fixed-wing aircraft, internally or externally transported by rotary-wing and tilt-wing, aircraft, and for materiel that contains a rigid wall, nonstandard, or modified shelter.

c. CAPDEV, MATDEV, SDDC, AMC, and AFC will coordinate to ensure technical manuals and technical data are sufficient to support transportation of TPI over the lifecycle considering the modes of transportation, personnel skillset, associated safety/regulatory requirements, and availability of transportation assets to include material handling.

d. CAPDEV, MATDEV, SDDC, AMC, and AFC will coordinate to ensure updates to the capabilities and operation for modes of transport are communicated to update the transportation engineering guidance, testing, and regulatory documents.

### **2–3. Materiel capability documents**

Tactical and strategic transportability requirements must be established early in the acquisition cycle and monitored throughout the process. The CAPDEVs, in coordination with the MATDEVs and SDDCTEA, will include a statement of the required modes of transport in the materiel capability documents for TPIs.

a. For strategic transport, materiel will be transportable by highways, standard gauge railway, sealift, and by USAF aircraft. Army aircraft will not be transported by railways.

b. For tactical transport, materiel transportability requirements (airlift, LVAD, high velocity airdrop, LOTS, and external or internal transport by rotary-wing aircraft) will be commensurate with the tactical deployability requirements of the units.

c. TPIs that are used in the initial support of forces deployed in contingency operations should be operational immediately after transport unless otherwise specified by the CAPDEVs in the materiel capability documents.

d. Except for a TPI that does not carry its payload during transport (such as wreckers, dump trucks, and material handling equipment) or one that specifies the transport with full payload is not required, cargo vehicles will be capable of being transported with rated payload by rail, sealift, and USAF aircraft.

e. When developing transportability requirement statements, include the following:

(1) *Highway*. If the item is to be transported or towed, the types and models of the planned transport vehicle will be stated and if unrestricted transport is required.

(2) *Rail*. State requirement for rail transportability in the continental United States and outside the continental United States. Include requirements for transport by specific types of rail equipment and any unrestricted requirements.

(3) *Sealift*. State any specific ship transport and environmental or protective measures requirements.

(4) *Logistics-over-the-shore operations*. State and define the smallest lighter or landing craft that is required to transport the item in LOTS operations.

(5) *Military cargo aircraft (fixed-wing)*. State the types required (C–27J, C–130, C–17, or C–5) and whether airdrop (LVAD or high velocity airdrop) is required. If transporting the TPI in sections is permitted, state the permissible number of people and the permissible assembly and disassembly clock hours. If removal of items are required to achieve an air transport configuration, state the development of packaging and palletization procedures for the removed items into the technical manual is required.

(6) *Helicopters*. Specify the types of helicopters required (CH–46, CH–47, CH–53, UH–60, UH–72, or V–22) and whether internal and/or external airlift is required. Specify scenario and mission range.

(7) *Intermodal freight containers*. List the size (10, 20, 25, 30, 35, 40, or 45 feet) and the International Organization for Standardization (ISO) designation of containers in which transport is required. Normally, nonvehicular materiel and small vehicles will be containerized.

(8) *Lift, tiedown, and cargo provisions*. Unless specified otherwise, standard lift, tiedown, and cargo provisions as appropriate for the mission and function of the TPI will be designed in accordance with MIL–STD–209.

(9) *Modal transport configuration*. Specify unique transport mode configuration details on the shipping data plate(s) as per MIL–STD–209 and relevant technical manuals. This includes information on item removal, stowage, transport settings, variable height suspension locking, special handling, sling length requirements, and any other specific procedures.

## **2-4. Materiel developer transportability reports**

The transportability report is a MATDEV document containing characteristics data and information specified in DI-PACK-80880. It assesses the feasibility of TPIs meeting transportability requirements. The MATDEV transportability report is the sole method for SDDCTEA to evaluate TPI transportability in the early stages of acquisition and development, before testing. MATDEVs will submit a MATDEV transportability report on all TPIs with stated transportability requirements to Director, SDDCTEA (DPE), 1 Soldier Way, Scott AFB, IL 62225-5006 or [usarmy.scott.sddc.mbx.tea-dpe@mail.mil](mailto:usarmy.scott.sddc.mbx.tea-dpe@mail.mil).

a. MATDEVs will submit transportability data to SDDCTEA. The data will be submitted in the MATDEV transportability report as explained in DI-PACK-80880.

b. MATDEV transportability reports and requests for transportability approval should be submitted to SDDCTEA based on each program's acquisition strategy and milestone decision review timeline.

c. Consider transportability early in the acquisition and development of TPIs. Factors such as size, weight, complexity, or accelerated acquisition strategies increase the need for an early submission of a MATDEV transportability report for SDDCTEA analysis. For major capability acquisition programs, MATDEV transportability reports must be submitted no later than 90 days before requesting a SDDCTEA transportability assessment or reaching MS B. Program offices aiming to conduct testing and obtain transportability approval after MS C must submit a MATDEV transportability report no later than 90 days prior to the desired deferral decision by ASA (ALT) or the MDA.

d. For MTA programs, MATDEV transportability reports must be submitted 30 days before test and evaluation strategy development in compliance with AR 73-1. An updated MATDEV transportability report is also required 90 days prior to MTA outcome determination.

e. SDDCTEA evaluates TPIs based on the transportability requirements established by the capability document for the TPI. Therefore, submit the TPI's capability document to aid SDDCTEA's evaluations and any requests for SDDCTEA transportability assessments. Appendix B contains a checklist of transportability actions.

f. MATDEV is required to coordinate with SDDCTEA when modifications or upgrades increase shipping dimensions or weight of an item or system to determine if a new transportability report and request for a transportability approval update is required.

## **2-5. Unit deployment analyses**

SDDCTEA and the CAPDEVs will review proposed materiel and determine the need for unit deployment assessments. Proposed materiel that has a strategic deployment requirement will have a unit deployment assessment conducted by SDDCTEA during concept development. When a unit deployment assessment is required, a unit deployment analysis will be conducted and furnished to the logistic representative before MS B decision reviews. The analysis will include the end item and all identified support equipment.

## **2-6. Airdrop and air transport**

Design assistance available from DEVCOM-SC includes the following:

a. Analysis of proposed designs to determine rotary-wing and tilt-wing air transport and airdrop acceptability. This assistance will be obtained as early as possible in the design stages of development.

b. Trial rigging procedures for air transport or airdrop of the final design for developmental materiel.

c. Laboratory facilities to conduct development tests in a controlled air transport and airdrop environment, including lifting and tiedown provision restraint test facilities and static drop, roller, and extraction provision testing for materiel to be delivered by parachute.

d. Recommendations to provide optimum airdrop capability for component and system designs and energy dissipation configurations.

e. When equipment is developed for airdrop, auxiliary equipment such as platform, parachute, webbing strap, and energy dissipation material will be considered (see MIL-HDBK-669). The unit (rigged) load will meet the limitations specified in MIL-STD-1791. Tiedown, suspension, and extraction provisions will meet the requirements of MIL-STD-814. Equipment designed for airdrop must also be designed to be air transportable in fixed-wing aircraft (see MIL-STD-1791).

f. Transportability approval by SDDCTEA is required for materiel that will be transported internally or externally by rotary-wing and tilt-wing aircraft. MATDEVs will submit test data or structural analyses to SDDCTEA and DEVCOM-SC that prove lifting and tiedown points meet MIL-STD-209 and MIL-STD-913. Test loadings or test flights may be required if the transportability engineering analysis indicates that transport criteria are not met or if flight characteristics of the item are unknown. Certification

by the DEVCOM–SC is required for transportability approval. Design assistance is available from USAF ATTLA for materiel with an internal fixed-wing air transport requirement (see MIL–STD–1791).

## **2–7. Transportability testing**

MATDEVs and CAPDEVs will use test facilities established and maintained by ATEC and TRADOC to conduct transportability tests on materiel. This does not prevent the use of development agencies' static drop facilities that are already in existence and maintained for other developmental purposes. MATDEVs and CAPDEVs will not establish new test facilities to conduct airdrop tests on materiel.

a. When an air transportability test loading is required, the MATDEV will submit physical characteristics and lift and tiedown testing results, that were done in accordance with MIL–STD–209 to SDDCTEA or USAF ATTLA.

b. MATDEV will request a special assignment airlift mission or a test loading that complies with AR 59–9.

c. Transportability test procedures will be coordinated with SDDCTEA and approved at least 30 days before the test date. SDDCTEA will be notified of the exact test time and location at least five workdays before the test. All transportability testing must be witnessed by SDDCTEA or SDDCTEA's appointed representatives.

d. If ATEC facilities are unavailable, a commercial test center can be used with SDDCTEA's prior approval. These centers must have suitable facilities for MIL–STD–209 and MIL–STD–810 transportability testing. SDDCTEA should receive a list, pictures, and calibration status of the test equipment to be used. MATDEV will cover travel expenses for SDDCTEA representatives to witness the testing.

e. Full transportability testing that validates all the TPI transportability requirements be conducted on final production representative item to achieve a transportability approval from SDDCTEA.

(1) For major capability acquisition programs, testing must be conducted, and final test reports submitted to SDDCTEA no later than 90 days for a MS C decision.

(2) For MTA programs, the timing of the final test report to SDDCTEA depends on the program's entry into the major capability acquisition cycle. MTAs entering MS B require the final test report for rapid prototype testing 90 days before outcome determination. MTAs entering MS C require the final test report for prototype testing 90 days before outcome determination. MTAs with design changes in low rate initial production need the final test reports for transportability testing 90 days before full-rate production decision for a transportability approval.

## **2–8. Transportation Engineering Agency modal instructions**

SDDCTEA develops a summary of transportability instructions for rail, highway, sealift lifting and lashing, containerization, and air transport for a variety of TPIs primarily based on transportability test results in separate modal instructions. These modal instructions summarize guidance of many TPIs to aid units to deploy efficiently, effectively, and safely as directed by DoDD 4510.11. They do not replace the need for detailed transportability procedures in the appropriate TPI technical manual. Contact SDDCTEA to obtain copies of modal instructions.

## **2–9. Transportability approvals**

MATDEVs will provide transportability data, supporting pictures, and diagrams required for transportability approvals to Director, SDDCTEA (DPE), 1 Soldier Way, Scott AFB, IL 62225–5006 or [usarmy.scott.sddc.mbx.tea-dpe@mail.mil](mailto:usarmy.scott.sddc.mbx.tea-dpe@mail.mil). Include the following:

a. Item preparation, loading, securing, and unloading procedures for shipment of the item by all appropriate modes of transportation will be specified.

b. Transportability pictures, drawings, and/or diagrams, to include transportability clearance diagrams of end and side profile drawings, that include critical dimensions, weight, and other technical data.

c. Transportability characteristics data within 30 days of an item being assigned either—

(1) To a table of organization and equipment.

(2) A standard line item number.

d. When SDDCTEA receives the required transportability certifications (shelter, air transport, helicopter sling loading, and/or airdrop) for an item, within 45 days of receipt of the final test report from the testing organization, SDDCTEA will provide the transportability approval. Transportability approvals will be based on the final test reports, not draft test reports of final production representative items. Test reports will typically cover MIL–STD–209 lifting and tiedown testing and MIL–STD–810 rail impact testing.

e. For major capability acquisition programs, transportability approvals are part of the requirements for basing a MS C decision (DoDI 4540.07). In limited circumstances (for an item that enters the acquisition system at or after MS C or its Adaptive Acquisition Framework approved alternative) transportability approval may be delayed until after completion of testing. If a delay for achieving approval until after MS C is granted by the MDA, the transportability approval will be achieved in low rate initial production phase and prior to a full rate production decision.

f. For MTA programs, the timing of the transportability approval is dictated by the acquisition strategy and where it will enter the major capability acquisition process after the signed outcome determination acquisition decision memorandum (ADM).

(1) For MTAs entering at MS B, it will follow the process of engineering and manufacturing development and achieve transportability approval prior to MS C.

(2) For MTAs entering at MS C, the transportability approval is required prior to the signed outcome determination ADM. If all transportability requirements are not met at that time, a transportability statement will be issued that will identify what needs to be addressed to achieve approval status and then to be provided to the MDA for the MS C decision. If a deferral for achieving approval post MS C is granted by the MDA, the transportability approval will be achieved in low rate initial production phase and prior to a full rate production decision.

g. When SDDCTEA has evaluated transportability and granted transportability approval for an item, the MATDEV will either—

(1) Certify that the data submitted during RDT&E are valid for the production model.

(2) Submit corrected data on the standard line item number.

## **2–10. Transportability statements**

MATDEVs provide the transport data and required certifications identified in paragraph 2–9 to SDDCTEA. If the transportability requirements or transportability military standards are not met, SDDCTEA will issue a transportability statement.

a. The transportability statement will identify the requirements or standards that are not met and specify what is required to achieve a transportability approval. Transportability statements can be provided—

(1) To support MS C decisions resulting in conditional materiel releases for major capability acquisition programs.

(2) To support urgent materiel release (UMR) items.

(3) To support MTA outcome determination decisions.

b. All TPIs beside UMRs must achieve a transportability approval prior to a MS C decision unless the MDA has delayed that requirement.

## **Appendix A**

### **References**

#### **Section I**

##### **Required Publications**

Unless otherwise indicated, all Army publications are available on the Army Publishing Directorate website at <https://armypubs.army.mil>. Military handbooks and military standards are available at <https://quicksearch.dla.mil/>.

##### **AR 59–9**

Special Assignment Airlift Mission Requirements (Cited in para 2–7b.)

##### **AR 70–1**

Army Operation of the Adaptive Acquisition Framework (Cited in para 1–1.)

##### **AR 71–9**

Warfighting Capabilities Determination (Cited in para 1–15e(5).)

##### **AR 700–15/OPNAVINST 4030.2/AFMAN 24–206/MCO 4030.33F/DLAR 4145.7/DCMA–1101**

Packaging of Materiel (Cited in para 1–16f.)

##### **AR 700–127**

Integrated Product Support (Cited in para 1–16k.)

##### **DoDD 4510.11**

DoD Transportation Engineering (Available at <https://www.esd.whs.mil/>) (Cited in title page.)

##### **MIL–HDBK–669**

Loading Environment and Related Requirements for Platform Rigged Airdrop Materiel (Cited in para 2–1b(7).)

##### **MIL–STD–209**

Lifting and Tiedown Provisions (Cited in para 1–13c(3).)

##### **MIL–STD–810**

Environmental Engineering Considerations and Laboratory Tests (Cited in para 1–13c(3).)

##### **MIL–STD–814**

Requirements for Tiedown, Suspension and Extraction Provisions on Military Materiel for Airdrop (Cited in para 2–1b(7).)

##### **MIL–STD–913**

Requirements for the Certification of Sling Loaded Military Equipment for External Transportation by Department of Defense Helicopters (Cited in para 2–1b(6).)

##### **MIL–STD–1366**

Transportability Criteria (Cited in para 2–1b(5).)

##### **MIL–STD–1791**

Designing for Internal Aerial Delivery in Fixed Wing Aircraft (Cited in para 2–1b(1).)

#### **Section II**

##### **Prescribed Forms**

This section contains no entries.

## Appendix B

### Checklist of Transportability Actions

#### B-1. Transportability actions

A list of transportability actions is at table B-1.

**Table B – 1**

**Checklist of transportability actions**

Item	Action	Responsibility
1	Assess the materiel and determine whether it is an NPI or TPI.	SDDCTEA
2	Determine the required interface of the system with the anticipated transportation system.	CAPDEV
3	Assess design risk in transportability in the letter of agreement; include a milestone for transportability approval.	MATDEV
4	Identify all TPIs in the transportability report.	MATDEV
5	List essential transportability requirements in the capability development document and/ or capability production document.	CAPDEV
6	Submit initial transportability report to SDDCTEA prior to MS A (where applicable based on the program milestone review timeline).	MATDEV or CAPDEV
7	Submit tentative basis of issue plan data for selected systems to SDDCTEA for unit deployability assessment.	CAPDEV
8	Include results of SDDCTEA's initial transportability assessment in MS A report.	MATDEV
9	Coordinate TEMP with SDDCTEA.	MATDEV
10	Request a transportability assessment from SDDCTEA prior to MS B (where applicable based on the program milestone review timeline).	MATDEV
11	Identify transportability requirements in the contract statement of work.	MATDEV
12	Submit information required for air transport, helicopter sling load, shelter, and LVAD certifications, if required.	MATDEV
13	Submit final test reports and independent evaluations to SDDCTEA prior to MS C (where applicable based on the program milestone review timeline).	MATDEV
14	Request transportability approval from SDDCTEA prior to MS C (where applicable based on the program milestone review timeline).	MATDEV
15	Submit end-item transportability characteristic to SDDCTEA for DA master file for table of organization and equipment (see TB 55 – 46 – 1).	MATDEV
16	Submit data to SDDCTEA for supplemental review of materiel modifications and up- grades that alter item configuration.	MATDEV

#### B-2. Comments

Help make table B-1 a better review tool. Submit comments to Deputy Assistant Secretary of the Army (Acquisition Policy and Logistics) (SAAL-ZL) via email to [usarmy.pentagon.hqda-asa-alt.mbx.asa-alt-publication-updates@army.mil](mailto:usarmy.pentagon.hqda-asa-alt.mbx.asa-alt-publication-updates@army.mil).

## Appendix C

### Internal Control Evaluation

#### C-1. Function

The function covered by this evaluation is the conduct of the Engineering for Transportability Program by MATDEVs and other functional specialists supporting the Engineering for Transportability Program.

#### C-2. Purpose

The purpose of this evaluation is to assist MATDEVs to evaluate the application of transportability engineering principles during the materiel acquisition and design process.

#### C-3. Instructions

Answers must be based on the actual testing of key internal controls (for example, document analysis, direct observation, sampling, and simulation, and/or others). Answers that indicate deficiencies must be explained and corrective action indicated in supporting documentation. These internal controls must be evaluated at least once every 5 years. Certification that this evaluation has been conducted must be accomplished on DA Form 11-2 (Internal Control Evaluation Certification).

#### C-4. Test questions

a. Establish internal procedures and controls to implement the Engineering for Transportability Program.

- (1) Are MATDEV transportability engineering focal points assigned?
- (2) Are transportability requirements considered in all phases of materiel development and identified in the life cycle sustainment plan and TEMP?
- (3) Have all TPIs been identified?
- (4) Have all NPIs been identified?
- (5) Is a plan in place to conduct IPRs with appropriate stakeholders?
- (6) Is a process in place to monitor TPIs until deficiencies are corrected and a transportability approval is obtained?

b. Testing—

- (1) Were transportability test requirements coordinated with the CAPDEV, operational tester, Army life cycle logistician, and SDDCTEA and included in the TEMP?

(2) Airdrop—

- (a) Are test facilities established and maintained by ATEC and TRADOC and used to conduct airdrop tests on materiel?

(b) Were MIL-HDBK-669, MIL-STD-209, and MIL-STD-814 tests completed, and vehicle data sheets submitted to SDDCTEA, U.S. Army Natick Soldier, Research, Development and Engineering Center (NSRDEC), and USAF ATTLA to support air transportability test loading and airdrop?

- (3) Were developmental tests of new and modified or updated materiel conducted to identify deficiencies and ensure compliance with transportability requirements?

(4) Were test data and structural analyses submitted to SDDCTEA and NSRDEC that prove lifting and tiedown points comply with MIL-STD-209 and MIL-STD-913 for materiel to be transported internally or externally by Army helicopters?

- (5) Did rail impact tests comply with MIL-STD-810?

(6) If a shelter is involved, was NSRDEC consulted to review the need for a shelter certification?

c. Coordination—

- (1) Has the request been made that SDDCTEA assign a transportability engineer to support the MATDEV?

(2) Was SDDCTEA notified of changes in materiel dimensions or weight resulting from product improvements, modifications, and upgrades?

(3) Was logistics management information related to transportability and transportation provided to SDDCTEA for update to the DA master file of standard equipment characteristics?

(4) Was NSRDEC contacted to obtain engineering and design assistance for certification of materiel to be air-dropped from fixed-wing aircraft or internally or externally transported by U.S. Army rotary-wing aircraft or for any required shelter certifications?



*d.* Transportability report—

- (1) Was all transportability data submitted in the transportability report format prescribed in appendix B?
- (2) Was an initial transportability report submitted to SDDCTEA no later than 30 days before the MS A decision review?
- (3) Was an updated transportability report submitted to SDDCTEA:
  - (a) No later than 60 days prior to the MS B decision review for RDT&E materiel?
  - (b) No later than 60 days prior to the MS C decision review for nondevelopmental item (and functional purchase description (or specification) submitted 60 days prior to the MS C decision review)?
  - (c) No later than 60 days prior to awarding a production contract?
- (4) Was a request for transportability analysis and approval submitted to SDDCTEA?

**C-5. Supersession**

This evaluation replaces the evaluation previously published in AR 70-47, dated 11 January 2019.

**C-6. Comments**

Help make this a better review tool. Submit comments to Deputy Assistant Secretary of the Army (Acquisition Policy and Logistics) (SAAL-ZL) via email to [usarmy.pentagon.hqda-asa-alt.mbx.asa-alt-publication-updates@army.mil](mailto:usarmy.pentagon.hqda-asa-alt.mbx.asa-alt-publication-updates@army.mil).

## **Glossary of Terms**

### **Deployability**

The ability to move forces and materiel anywhere in the world in support of a military operation.

### **Lighter**

Craft used to transport cargo or personnel from ship to shore; may include amphibians, landing craft, causeways, ferries, and barges.

### **Lighterage**

The process in which small craft are used to transport cargo or personnel from ship to shore. Lighterage may be performed using amphibious, landing craft, discharge lighters, causeways, and barges.

### **Milestone C**

A milestone decision authority-led review at the end of the engineering, manufacturing, and development phase.

### **Milestone decision authority**

Designated individual with overall responsibility for a program. The MDA will have the authority to approve entry of an acquisition program into the next phase of the acquisition process and will be accountable for cost, schedule, and performance reporting to higher authority, including Congressional reporting.

### **Nonproblem item**

The transportability NPI is materiel that does not qualify as a TPI. An example of an NPI is a vehicle that already has a transportability approval and only a radio is being updated within the vehicle. In this example, a new transportability approval is not required. NPIs do not require a transportability approval.

### **Transportability**

The inherent capability of an item or system to be effectively and efficiently moved by required transportation assets and modes.

### **Transportability approval**

A document from SDDCTEA, the Army transportability agent, that an item of materiel, in its shipping configurations, is transportable by the required mode(s) of transportation and meets transportability requirements of the requirements/capabilities document.

### **Transportability assessment**

Initial assessment of an item's ability to meet deployment requirements. The evaluation is based on the item's projected dimensions, operational capabilities, and fielding requirements and is usually produced prior to MS B.

### **Transportability characteristics data**

Basic transportability data on all items of the table of organization and equipment are maintained in the DA standard transportability data file. It includes dimensions and weight of each item of materiel in the various shipping configurations together with the item nomenclature and identification (line item number and national stock number) and information on item characteristics that influence transporting the item (for example, location and strength of tiedown and lifting provisions, location of center of gravity, wheel and track loads and pressure, and cargo bed dimensions).

### **Transportability criteria**

The physical characteristics of the individual modes of transportation together with legal and administrative requirements that must be considered in the design of SEM items to assure efficient movement by existing and proposed transportation systems.

### **Transportability engineering**

The process of identifying and measuring limiting constraints, characteristics, and environments of transportation systems; the integration of these data into design criteria to use operational and planned transportation capability effectively; and the development of technical transportability guidance.

### **Transportability engineering analysis**

An evaluation of the transportability of an SEM item and its components, auxiliary, and ancillary equipment. An analysis will summarize its ability to be transported by the required modes of transportation.

**Transportability problem item**

Materiel, regardless of its condition, in its shipping configuration which, because of its size, weight, fragile, or hazardous characteristics or lack of adequate means for lifting and tiedown will be denied movement, will require special permits or waivers and special equipment or handling, or will be unacceptably delayed when moving within existing or newly designed transportations systems. Materiel is considered a TPI when any of the following conditions apply:

- a. Item is wheeled or tracked or is to be towed or self-propelled on or off highway.
- b. Item increases the physical characteristics of the designated transport medium.
- c. Item requires special handling or special loading procedures.
- d. Materiel exceeds any of the following conditions: (1) Length – 20 feet (6.1 meters) (based on the external size of a standard 20-foot ISO container). (2) Width – 8 feet (2.4 meters) (based on the external size of a standard 20-foot ISO container). (3) Height – 8 feet (2.4 meters) (based on the external size of a standard 20-foot ISO container). (4) Weight – 10,000 pounds (4,535 kilograms) (based on the payload of the 5-ton truck). (5) Weight per linear foot – 1,600 pounds (726 kilograms). (6) Floor contact pressure – 50 pounds per square inch (344.75 kilo pascal). (7) Maximum axle load (pneumatic tires) – 5,000 pounds (2,268 kilograms). (8) Maximum wheel load (pneumatic tires) – 2,500 pounds (1,134 kilograms). (9) Tire pressure – 90 pounds per square inch (620.5) kilo pascal.

**Transportability report**

A report submitted by the MATDEV or contractor to SDDCTEA for all TPIs.

**Transportability statement**

A document produced by SDDCTEA to provide the status of the SEM's transportability approval. The statement should clearly list what transportability mode testing has been successfully completed and the transport modes where there are still issues and how those issues can be resolved.

**Unit deployment analysis**

The final evaluation of the amount of strategic lift consumed by units receiving a TPI system.

**Unit deployment assessment**

Initial assessment of a unit's ability to be deployed in terms of strategic lift consumed. The assessment is based on the projected dimensions of the proposed systems with associated items of equipment.

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