

The Engineering for Transportability Program White Paper

Forward

Over the years of working in the Engineering for Transportability Program, I've found a great deal of misinformation and misunderstanding of what transportability is and what we at SDDCTEA do. So this is my attempt to try and explain who we are, what we do, and why we do it. I'll start with two basic definitions taken from AR 70-47.

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

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.

Reference Documents

Department of Defense Instruction (DoDI) 4540.07, "Operation of the DoD Engineering for Transportability and Deployability Program," dated 19 February 2016

Army Regulation 70-1, "Army Acquisition Policy," dated 22 July 2011

Army Regulation 70-47, "Engineering for Transportability Program," dated 11 September 2012

MIL-STD-209K, Department of Defense Interface Standard for Lifting and Tiedown Provisions, 22 February 2005

MIL-STD-810G w/Change 1, Method 526, Rail Impact, Department of Defense Test Method Standard, 15 April 2014

MIL-STD-1366E, Department of Defense Interface Standard for Transportability Criteria, 31 October 2006

Purpose

The purpose of the Engineering for Transportability Program (per DoDI 4540.07, section 2.1) is to ensure that effective transportability and deployability engineering techniques and procedures for new and modified systems and equipment (S/E) are incorporated into the DoD materiel acquisition process, as defined by DoD Directive 5000.01 and DoD Instruction 5000.02. SDDCTEA serves as the DoD Secretariat for the Engineering for Transportability and Deployability Program (section 2.5.d.(3).)

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From the Foreword of MIL-STD-209K, paragraph 2:

The requirements in this standard are military-unique interface requirements developed specifically for ensuring that the lifting and tiedown provisions on military equipment meet the physical, functional and operational environment attributes for transportation assets of the Defense Transportation System (DTS).

From MIL-STD-1366E, paragraph 1.1 General:

The standard covers dimensional and weight limitations for all modes of transport to ensure that new and modified systems meet the interface requirements of the Defense Transportation System (DTS) (highways, tunnels, bridges, railways, etc.) and the DTS lift assets (rotary and fixed wing aircraft, railcars, ships, barges, etc.) for unrestricted worldwide transport and deployment. It also covers lifting and tiedown provisions, containerization criteria, overloads, assembly/disassembly, air delivery, shelter criteria, transportability testing, and modeling and simulation of the transportation environment. This standard will allow materiel development and procurement activities to design military equipment to meet the transportability requirements of various modes.

Transportability Problem Item (TPI)

A TPI is 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 transportation 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. The item increases the physical characteristics of the designated transport medium.
- c. The 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).

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(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 Approvals

From DoDI 4540.07:

3.4. TRANSPORTABILITY COORDINATIONS

b. DoD Component materiel developers must request approval for S/E (systems or equipment) that qualify as transportability problem items from the appropriate mode transportability agent(s) at least 90 calendar days before Milestone C or before full rate production of any Engineering Change Programs or Proposals or System Enhancement Programs or Packages.

c. DoD Component mode transportability agents must analyze and approve all S/E that qualifies as transportability problem items before Milestone C, if that S/E meets all of its transportability requirements.

From AR 70-1:

4-5. Transportability considerations affecting the acquisition strategy Efficient and economically transportable equipment and combat resources are critical to enhancing the Army's warfighting capability. All new systems, major modifications, upgrades to current systems, nondevelopmental items, commercial items, and re-procurements designated as transportability problem items must obtain transportability approval from the Commander, SDDC, in accordance with DODI 4540.07 and AR 70-47. The transportability of the item and the deployability of the force will be evaluated throughout the acquisition cycle as follows:

a. The CAPDEV and MATDEV will include SDDC in all concept studies of transportability problem items. The SDDC provides transportability and deployability assessments that determines the impact of proposed design characteristics on the unit or force's ability to meet current and future deployment criteria using existing and future deployment assets.

b. Transportability and deployability will be considered for all decision reviews of transportability problem items.

c. The PMs must obtain a transportability and deployability assessment of transportability problem items from SDDC before milestone B.

d. Transportability approval from SDDC will be required before milestone C.

The Military Surface Deployment and Distribution Command Transportation Engineering Agency (SDDCTEA) has a small, but important role in the Army Acquisition Process.