UNITED STATES MARINE CORPS
Logistics Operations School
Marine Corps Combat Service Support Schools
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LS 104

STUDENT OUTLINE

LOAD VEHICLE/CARGO ON RAIL CARS

LEARNING OBJECTIVES

1. Terminal Learning Objective: Given cargo requiring transportation by rail, tools, and dunnage, safely load and secure vehicles and cargo on rail cars without damage in accordance with the references.

2. Enabling Learning Objective: Given cargo requiring transportation by rail, tools, dunnage and the references:

a. Inspect rail car for suitability. (0481.1.8a)

b. Prepare rail cars for loading. (0481.1.8b)

c. Prepare vehicles for loading. (0481.1.8c)

d. Block and brace vehicle wheels. (0481.1.8d)

e. Tie-down vehicles to a rail car. (0481.1.8e)

OUTLINE

1. INSPECT RAIL CAR FOR SUITABILITY.

a. The U.S. rail system and rules. The rail system in the United States is unique. In most countries, rail systems are government owned and operated. Canada has a system of government and privately owned rails. The U.S. rail systems are exclusively privately owned. With the large numbers of privately owned railroads and most bidding to receive contracts with the Department of Defense, it was determined that a single set of rules should by established to set standards for all rail carriers moving DOD passengers and equipment. These rules were established and published by the

American Association of Railroads (AAR). These rules have been reprinted in Marine Corps Order P4600.7D. The rules apply to loading, blocking, bracing and tie down of all military equipment to be moved by rail in the United States. The Army uses the same AAR rules that are reprinted in Technical Manual 55-2200-001-12.

b. Types of rail cars.

(1) The Generic Flat Car. This car is used most often to transport tanks, trucks, artillery pieces, engineer equipment, and other large, heavy gear. Wooden deck 85 feet long.

(2) The Center Chained Flat Car. This car is used for tanks and artillery pieces, and was specifically designed to transport two M1 tanks. With the built-in chain system, the time required to tie down vehicles on the flat car is greatly reduces. Steel Deck 89 feet long.

(3) The Bilevel Flat Car. This car has particular application to small wheeled vehicles such as jeeps and HMMWVs.

(4) The Gondola. Gondolas are used mainly for CONEX's, communication and electronic vans, as well as small boxes and some containerized equipment.

c. Conduct joint inspections. The first thing accomplished at the railhead is a joint inspection of the rail cars by the TMO/BTO, the using unit, and the rail provider. The purpose of this inspection is to insure that all cars contracted are serviceable and meet the using unit's needs. During the inspection, ensure that there are no missing or rotted floor boards and that stake pockets are present and not damaged. On gondolas and TOFCs, ensure that the metal bottoms and chain tie downs are present and usable. Reject unserviceable cars and have them replaced. Depending on the condition, unserviceable cars may cause injury or cause the load not to be substantially secured during movement of the rail car. Inspect rail cars to verify deck suitability. On chain equipped cars, locking channels should not be bent and all chains and tightening devices should be operative. Loading teams should have a rust retarded oil available to free frozen locking devices.

2. PREPARING RAILCAR FOR LOADING.

a. Chocking Railcar Wheels. Chock rail car wheels to prevent movement while loading. Trains are loaded "circus fashion", so chock rails several cars ahead of the one on which you'll place the first vehicle to prevent movement as vehicles are driven over them.

b. Precautions to be taken prior to loading vehicle onto a railcar:

(1) Store unused chains in the channels to prevent damage when loading vehicles.

(2) Clean debris from locking channels on chain equipped cars to allow locking devices to be moved the length of the channel.

(3) Brake Wheel Position. Place all brake wheels in the down stow position to prevent damage as vehicles drive over them.

(4) Loading Ramps. End ramps of various types may be used to elevate wheeled and tracked vehicles to the height of the rail cars.

(a) Some rail heads have fixed concrete end ramps. Others will have earth and gravel filled ramps. These are particularly dangerous for loading during inclement weather and will require continuous maintenance as more and more vehicles travel over them.

(b) When bilevel cars are used, the rail carrier will provide bilevel ramps for vehicles loaded on the top level of the cars.

(5) Wheeled Vehicle Spanners.

(a) Use wheeled vehicle spanners to bridge wheeled vehicles from car to car. Some flat cars have built-in spanners, others will require the moving unit to construct and place spanners. Use spanners strong enough to support heaviest load anticipated.

(b) When constructing and placing spanners,ensure that there is a minimum of 12 inches overlap of spanners on each rail car. Place ground guides on both sides of the car

to observe the spanners as vehicles roll over them to ensure that the spanners do not slip out of place.

(c) Most tracked vehicles have a self bridging capability greater than the distance between two connected rail cars and won't require the use of spanners.

(6) Vehicle Guides. In all instances use vehicle guides to ensure that moving vehicles remain centered on the rail cars.

(a) Guides that are standing on rail cars should remain one full car ahead of the car on which the vehicle is moving.

(b) Never walk backward.

(c) Use three guides.

(d) Explain your hand and arm signal.

3. <u>PREPARE VEHICLES</u>.

a. Conduct safety inspection of vehicles by:

(1) Ensuring that all lifting shackles are attached to the vehicles. Do not use bumperetts, axles, towing pintles, or towing hooks as points of attachment. Make sure fuel tanks are no more than 3/4 full and fuel cans are empty and purged of fuel.

(2) Remove or band canvas and bows to prevent wind damage.

(3) Protect windshields.

(4) Reduce vehicles to their lowest configuration.

(5) Secure any materials or equipment loaded in beds or trucks by banding.

4. <u>BLOCK AND BRACE VEHICLE WHEELS</u>.

a. There are many different wheel block patterns used for various vehicles. Block all wheels fore and aft for longitudinal movement. Blocks may be prenailed; that is, the nails can be partially driven into the blocks thereby making

it easier for you, while under a vehicle, to drive the nails into the car floor. Locate the 45 degree portion of the block against the front and rear of the wheel. Secure the heels of blocks to the floor with three 40D nails and toenail the portion under the tire with two 40D nails. Two blocks per wheel are required.

b. Just as with wheel blocks, braces vary depending on the vehicle they are used for.

c. Chock blocks and braces are not required on steel deck cars, however four additional chains are recommended. Be sure to leave at least 10 inches between vehicles to avoid damage in transit and to obtain a proper angle of tiedown.

d. Tanks and other large tracked vehicles require a different approach. For these vehicles and others that overhang on rail cars, the inside blocking must be completed before loading. This is done by first measuring the inside vehicle width from track to track. Subtracting 7 1/2 inches from the inside width gives you the width of the horizontal portions of the side blocking frame. Nail these pieces vertically to the floor of the rail car prior to the vehicle being loaded. This will keep the vehicle from shifting. (Double stack)

5. <u>TIE DOWN VEHICLE</u>.

a. Secure chain to appropriate tie-down points and ensure proper tension of chains exists. Tension wire rope to allow no more than one inch deflection of the vehicle's suspension. After initially tensioning each chain, strike it sharply with a hammer or bar and retighten. Repeat this step if necessary.

b. Secure excess wire rope or chain to the tension bearing part of the chain.

c. On chain devices, secure open-faced hooks to chain link with wire.

d. Lock chain-tightening devices with wire. Tighten turnbuckle jams wrench tight.

e. Turn turntable type winches in the proper direction so

that the chain is taken up on the underside of the ratchet wheel.

REFERENCES*:*

1. American Association for Rail (AAR)

2. TM 55-2200-001-12

3. MTMCTEA PAMPHLET 55-19

4. MCO P4600.7D