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Training Command
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MTMOC 2403

STUDENT OUTLINE

VEHICLE PREPARATION FOR EMBARKATION

LEARNING OBJECTIVES:

1. TERMINAL LEARNING OBJECTIVES: Given the reference material and requirement to prepare motor transport vehicles for embarkation, identify the requirements for the preparation of equipment for embarkation, per FMFM 4-6, FMFM 4-9, Joint Pub 3-02.2. (3510.1.4)
2. ENABLING LEARNING OBJECTIVES: Given the reference material and requirement to prepare motor transport vehicles for embarkation, per FMFM 4-6, FMFM 4-9, Joint Pub 3-02.2, identify:
 - a. The services that must be performed on equipment prior to embarkation. (3510.1.4a)
 - b. Identify equipment marking requirements. (3510.1.4b)
 - c. Identify the maintenance services required for equipment while aboard ship. (3510.1.4c)

OUTLINE

1. PREPARATION OF EQUIPMENT FOR EMBARKATION BY AIR

a. Considerations and Selection of Equipment

(1) The type of equipment required and the maintenance performed on the equipment by a deploying unit will depend on the environment (arctic-like areas, deserts, mountains, jungles, and so forth) the unit will be deploying to.

- (a) Cold weather operations

1 May require the use of special equipment because of deep snow and extremely cold weather.

2 Vehicles will require special kits and be equipped with chains and shovels.

3 Vehicle components will have to be winterized by maintenance personnel to prevent freezing and damage.

4 Equipment paint patterns will have to be changed for arctic operations.

(b) Desert operations

1 Desert operations will necessitate the need for extra supplies such as fan belts, tires, towing apparatuses, water cans, and so forth.

2 Because of the desert environment, maintenance requirements on equipment will increase, requiring the need for additional maintenance personnel, operators, equipment, and supplies.

3 Vehicles with poor cross-country mobility should not be utilized in desert operations.

b. Services to be Performed on Equipment Prior to Embarkation by Air

(1) Units alerted for a combat or training operation will perform a limited technical inspection (LTI) on all equipment before deployment to determine equipment completeness and whether the equipment meets required performance criteria.

(2) The deploying unit's responsibilities in the preparation of equipment for embarkation by air includes the following services:

(a) Vehicles will be free from fuel, oil, and coolant leaks.

(b) Vehicle tires must have sufficient air pressure to prevent wheel contact with the aircraft's flooring. The tire inflation data listed in applicable technical manual must be utilized.

(c) The vehicle's fuel tank(s) will not be more than one-half full regardless of where positioned on aircraft. Fuel may spill out of a fuel tank that is more than one-half full, particularly if the vehicle is ramp loaded on the aircraft. A vehicle will be positioned on the ramp area of an aircraft with the fuel tank filler opening on the high side of the ramp.

(d) All vehicles must be clean and free of dirt, mud, snow, ice, insects, oil, and grease prior to loading.

(e) Fuel tankers will be empty, purged, and labeled per the appropriate directives.

(3) The deploying unit must also make sure that vehicles and cargo meet the following regulations.

(a) Fuel cans (Jerry cans) may be filled to the maximum full level if the seal is serviceable and will not leak.

(b) Vehicle cargo must not be higher than the side racks of the vehicle.

(c) The cross-country (off-road) payload capacity of the vehicles must not be exceeded.

(d) Cargo must be secured inside the vehicle bed with at least one-half inch rope, laced laterally and longitudinally to the outside vehicle tiedown points.

(e) The opening at the rear of a C-130 and C-141 will not allow for the entry of a vehicle whose height is greater than 102 inches. Vehicles assigned to be transported aboard these aircraft, whose height is greater than 102 inches, must have their height reduced to 102 inches or less.

(f) Vehicle bows and canvas will be removed and stowed in their stowage space on the vehicle.

(g) Large trucks, heavy armored vehicles, and those items which cannot be reduced lower than 102 inches in height should be programmed for airlift in C-5 aircraft. This cargo is known as "outsized cargo."

(h) Collapsible fuel containers may be filled with fuel for movement by air. If the containers are empty, they may be shipped without being purged, but must be properly labeled.

(i) Generally, water systems mounted on vehicles and water trailers such as M149's will be shipped empty; however, M149's may be shipped with water when it has been determined that water will not be available at the unit's destination. Water may be transported in 5-gallon water cans, 55-gallon drums, 250-gallon rubber water bladders, and 500-gallon fabric collapsible drums.

(j) Supplies and equipment not loaded into vehicle cargo compartments will be secured on pallets or packed in other suitable containers.

(k) CONEX inserts and containers will not be filled with hazardous materials. Hazardous materials must be air transported on 463L pallets, identified, and certified by authorized individuals.

(l) The center of balance (CB) computations on all vehicles must be completed after all on vehicle material and supplies have been loaded. Changes will not be made to the vehicle's cargo load once the center of balance computation is completed. The vehicle CB and weight markings will change with the changing of the vehicle load and for this reason, the markings are not permanent. The CB will be calculated and marked on the vehicle by embarkation personnel.

(m) Lifting devices and tie down shackles must be serviceable and on the vehicle.

c. Marking Vehicles for Embarkation by Air. Vehicles will be marked per the unit SOP and will at the minimum contain the following information:

(1) weight of the vehicle when loaded or unloaded,

(2) individual axle weights marked above each axle on each vehicle and trailer weighing 2,000 pounds or more, and

(3) the center of balance (CB) will be marked by placing a clearly distinguishable one-inch by three-inch stripe (tape) on both sides of the vehicle at the CB. The CB will be calculated and marked by embarkation personnel.

d. Organization and Staging for Air Field Departure Operations

(1) Detailed responsibilities of participating organizations and agencies are outlined for each functional area. They are discussed as follows:

(a) The Airlift Control Element (ALCE) is an element of the Airlift Control Squadron (ALCS).

1 The mission of the ALCE is to plan airlift control operations for a given base, to survey the facilities of the base, and to control, coordinate, and report airlift operations at that base.

2 The ALCE is also responsible for aircraft movement control, communication, technical supervision of off-loading operations, marshaling of aircraft, and providing continuous liaison with all interested agencies to make sure that the operation is proceeding according to plan.

(b) The Departure Airfield Control Group (DACG) is normally provided by the major command of the service(s) whose units are scheduled for movement by Air Force aircraft.

1 The mission of the DACG is to coordinate and support the outloading of the unit for deployment or redeployment.

2 The DACG is responsible for:

a Maintaining liaison with the deploying unit.

b Arranging with the ALCE for any Air Force technical assistance required by the deploying unit.

c Establishing communications.

d Maintaining liaison with the aerial port section of the ALCE.

e Calling the aircraft loads forward from the marshaling and staging areas to the alert holding area.

(2) Departure airfield operations are outlined in four separate areas of activity and list the responsibilities of the deploying unit, the DACG, and the ALCE within each area.

(a) The marshaling area is the deploying unit's area of responsibility. The marshaling activities may take place within the deploying unit's permanent area or in another area to ease movement and control.

1 The deploying unit's functions within the marshaling area include:

a Staging the vehicles, equipment, and supplies in aircraft load order, per the established load plan.

b Performing final preparation of vehicles and equipment.

c Preparing personnel and cargo manifests.

d Making sure that adequate shoring and dunnage material are on hand and readily available. Ensure all cargo is secured and that adequate tie down devices are on hand.

e Briefing troops and troop commanders on their responsibilities.

2 The DACG functions within the marshaling area include:

a Maintaining liaison with the deploying unit.

b Arranging with the ALCE for Air Force technical assistance required by the deploying unit.

c Establishing communications.

d Calling aircraft loads forward from the marshaling area and assuming control in the alert holding area.

3 The ALCE functions within the marshaling area include:

a Providing technical assistance to the deploying unit in the preparation of vehicles and equipment for loading.

b Providing aircraft departure times to the DACG.

(b) The alert holding area is the equipment/vehicle and passenger control area. It is located in the vicinity of the departure airfield. The alert holding area is used to assemble, inspect, hold, and service aircraft loads. It is in this area that control of the load is transferred from the individual unit to the DACG at this point.

1 The deploying unit's functions within the alert holding area include:

a Making sure that the aircraft loads arrive at the alert holding area at the time specified by the DACG (the deploying unit's embarkation officer).

b Providing the DACG (embarkation officer) with passenger and cargo manifests and the required documentation.

c Providing personnel to correct load discrepancies.

2 The DACG functions within the alert holding area include:

a Inspecting aircraft loads to make sure they are complete and correctly prepared, and that the required shoring, floor protection materials, 463L (pallets), and dunnage are available.

b Establishing a discrepancy correction area.

c Inspecting documentation for accuracy and completeness.

d Making sure passengers are accounted for and available.

e Providing emergency maintenance, POL, and related services, as necessary, to accomplish the outloading mission.

f Directing or guiding the aircraft load to the joint inspection (call forward) area.

(c) The call forward area is that portion of the departure airfield where the joint inspection is conducted. The joint inspection should be conducted six hours prior to aircraft

departure. Three hours prior to departure a final briefing will be provided to the deploying troops, and manifests are reviewed for accuracy.

1 The deploying unit's functions within the call forward area include the correcting of all discrepancies found by the DACG/ALCE inspection. (OFF SLIDE NO. 13)

2 The DACG functions within the call forward area include:

a Assisting in the conduct of the joint inspection of aircraft loads and manifests.

b Making sure that discrepancies found during the joint inspection are corrected.

c Making sure that the deploying unit adheres to the established timetable.

d Making sure that deficiencies noted during the joint inspection are relayed to the alert holding area and the unit, to prevent recurrence of the same deficiencies.

e Providing fueling and defueling capabilities and emergency maintenance for vehicles to be transported.

3 The ALCE functions within the call forward area include:

a Coordinating with the DACG, all changes that may be required to the aircraft load configuration.

b Briefing drivers and passengers on flight line safety, driving procedures, smoking rules, and special precautions.

c Notifying the DACG when the loads are to be dispatched to the loading ramp area ready line.

(d) The loading ramp area, including the ready line area, is controlled by the ALCE.

1 The deploying unit's functions at the loading ramp area include:

a Making sure that shoring, if required, is on hand and ready for use.

b As requested by the load team chief, provide help in loading and securing the aircraft load.

c Retaining one copy of the final passenger/cargo manifest.

2 The DACG will, at the loading ramp area, maintain coordination with the deploying unit representative and the ALCE.

3 The ALCE functions at the loading ramp area include:

a Making sure that all drivers have been briefed on flight line safety, driving procedures, smoking rules, and any special precautions.

b Making sure each aircraft load is positioned at the proper aircraft at the specified time.

c Maintaining liaison with the aircraft crew and the DACG.

2. VEHICLE PREPARATION FOR AMPHIBIOUS EMBARKATION

a. Vehicle preparation for amphibious embarkation includes an inspection to make sure the presence and satisfactory condition of all required equipment, tools, and lifting fixtures. Instructions for the preparation of vehicles are normally prescribed in the unit's SOP and should include such information as:

(1) that fuel tanks should not exceed three-fourths capacity, and a reserve supply of fuel and lubricants in five gallon cans should be secured to the vehicle;

(2) that fuel, lubricating, cooling, and ignition systems should be checked, and tires should be inflated to the specified loading pressure;

(3) that vehicles to be landed across the beach, to include the loaded cargo, should be waterproofed;

(4) that cargo compartment bows should be removed, secured together, and attached to the body of the vehicle and canvas tops should be folded and placed in the vehicle;

(5) that windshields will be lowered only when required;

(6) that vehicles will be free from fuel, oil, and coolant leaks, and the vehicle batteries must be free of corrosion and properly secured and connected;

(7) whether tire chains will be used during the landing;
and

(8) that cargo loaded in vehicles should be securely crosslashed and that its height should not exceed the highest permanent point of the vehicle.

b. Vehicles should be marked on each side of the bumpers, on each vehicle side (usually on doors), and on the hood top to indicate information such as:

(1) the ship's hull number,

(2) the hold level in which the vehicle will be stowed,

(3) the unloading priority number, and

(4) the landing serial number.

(5) Markings should be made on masking tape with a grease pencil. Chalk may be used when masking tape and grease pencil are not available.

c. Embarkation should be executed per the approved embarkation plan and is the mutual responsibility of the naval forces, landing force, and external supporting agencies. The following definitions apply:

(1) Mounting includes the assembly, preparation, and maintenance of equipment in the mounting area; movement of equipment to the loading points; and subsequent embarkation of equipment.

(2) Marshaling is the process by which units participating in an amphibious operation move to temporary camps in the vicinity of the embarkation points, complete the preparation for combat, and prepare for loading.

(3) Embarkation is the loading of units, with their supplies and equipment, into assigned shipping.

(4) The mounting/staging area is the general locality where assigned forces of an amphibious operation, with their equipment, are assembled, prepared, and staged in shipping priority.

(5) The embarkation area is an area ashore, including a group of embarkation points, in which final preparations for embarkation are completed and through which assigned loads for crafts and ships are called forward for embark.

d. General Responsibilities for the Execution of Embarkation

(1) Commander, Amphibious Task Force (CATF)

(a) Exercises overall control and general supervision of the execution of embarkation per the embarkation schedule and loading plans.

(b) Coordinates control of embarkation and movement to embarkation points with the commander, landing force (CLF).

(c) Coordinates for the provision of lighterage and/or landing craft from agencies external to the amphibious task force (ATF) and landing force.

(2) The Combat Cargo Officer (CCO), usually a USMC embarkation officer, or a ship's first lieutenant, is the moving unit's point of contact.

(3) Commander, Landing Force (CLF)

(a) Prepares the landing force for embarkation.

(b) Requests any loading assistance required from forces afloat.

(c) Moves embarkation components to and within the embarkation areas, and assembles cargo and personnel on shore per the embarkation schedule and loading plan.

(d) Provides for security of the embarkation area, or coordinates security measures with external agencies as prescribed by higher authority.

(e) Provides an embarkation control officer ashore for coordination/control of embarkation evolutions with CATF, ship representatives, and/or outside agencies.

(f) Provides for communications ashore in the embarkation area, including adequate communication security measures.

(4) Agencies external to the amphibious task force and the landing force may be given responsibilities by higher authority. Such responsibility may include:

(a) Specifying and making available required marshaling areas, embarkation areas, embarkation points, and developing and operating facilities therein.

(b) Providing authorized supplies and services to the amphibious task force, including supplies to be loaded and communication facilities for use during embarkation.

(c) Coordination and control of the administrative movements within the embarkation areas.

(d) Security of embarkation areas.

(e) Providing, at each embarkation point, the loading equipment required on docks, dunnage, technical assistance, stevedores, and other loading aids.

e. Movement to the Embarkation Area

(1) Consideration as to the time of arrival of cargo and personnel at the embarkation area is dependent upon the following:

(a) The distances between the base camp, marshaling area (if employed), and the embarkation area.

(b) The time necessary to assemble vehicles in the embarkation area for loading.

(c) The availability of the embarkation area, points, cargo assembly, and vehicle staging areas.

(2) Transportation of equipment to the embarkation area is dependent on the means available and the distance of movement.

(a) Movement by truck is more economical for distances less than fifty miles.

(b) For distances greater than fifty miles, movement by rail is faster and more economical.

(3) The time requirements for the delivery of supplies and equipment to the embarkation area are as follows:

(a) Non-organizational supplies and equipment are normally delivered to the embarkation area from twenty-four hours to several days prior to loading.

(b) Organizational supplies, equipment, and vehicles usually arrive at the embarkation area twenty-four to forty-eight hours prior to loading. Make sure vehicles arriving in the embarkation area have fuel tanks that are three-fourths full.

(4) The advance parties should arrive for embarkation at least twenty-four hours prior to the commencement of any loading.

f. Assembly of Vehicles in the Embarkation Area

(1) Vehicles are parked in the assigned vehicle assembly area per the loading plan/according to the holds and hold levels in which they are to be loaded.

(2) Vehicles are parked so that the vehicle with the lowest landing priority is first in line and thus the first vehicle loaded into the ship.

(3) The last vehicle to be loaded has the highest landing priority.

(4) Sufficient sentry posts should be established to provide security. This responsibility, as directed by the CLF, may rest with an external agency or with the landing force.

g. Vehicle Storage and Maintenance Requirements Aboard Ship

(1) Vehicles are loaded and stowed per established vehicle priorities, and the following steps are required:

(a) Once positioned aboard ship, vehicles should be blocked, chocked, and secured with lashing chains or cable to prevent shifting while underway.

(b) If a vehicle is to be embarked/stowed aboard a ship for more than five days and it cannot be started, disconnect the battery cables and tape the battery clamps.

(c) A vehicle watch should be established in order to check lashings, provide security for vehicles and cargo, and act as fire watches.

(2) Vehicle inspections should be conducted daily, or as directed by the CLF/CATF, on all vehicles to ensure that they will be functioning properly when debarked at the objective area. Permission must be obtained from the ship's commanding officer or his designated representative to enter the cargo holds to conduct inspections. The inspections should include:

(a) Checking for fuel, oil, and water leakage.

(b) Inspection of batteries for leakage or low electrolyte level.

(c) Inspection of lashing assemblies, blocking, and bracing to make sure vehicles are secure from movement.

(d) Inspection for damage or deterioration due to dampness and sea water.

(e) Inspection of tires for loss of air and damage.

(3) Vehicle maintenance is performed periodically and the following accomplished:

(a) Vehicles must be wiped down to prevent corrosion and first echelon lubrication must be accomplished at regular intervals.

(b) Vehicles should be started periodically, regardless of location.

(c) Before starting vehicles on ship, permission must be obtained from the ship's commanding officer or his designated representative. The use of the ship's blower and other safety precautions are mandatory to ensure adequate ventilation and protection against carbon monoxide poisoning.

REFERENCES

FMFM 4-6, Movement of Units in Air Force Aircraft

FMFM 4-9, Motor Transport

FM 55-15, Transportation Reference Data

Joint Pub 3-02.2, Joint Doctrine For Amphibious Embarkation