NATO STANDARD

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SOLDIER PHYSICAL LOAD CONFIGURATIONS AND PRINCIPLES GOVERNING THE DESIGN OF THE INDIVIDUAL LOAD-CARRYING EQUIPMENT OF THE COMBAT SOLDIER

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NORTH ATLANTIC TREATY ORGANIZATION

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NATO LETTER OF PROMULGATION

3 July 2020

1. The enclosed Allied Engineering Publication AEP-4780, Edition B, Version 1, SOLDIER PHYSICAL LOAD CONFIGURATIONS AND PRINCIPLES GOVERNING THE DESIGN OF THE INDIVIDUAL LOAD-CARRYING EQUIPMENT OF THE COMBAT SOLDIER , which has been approved by the nations in the NATO Army Armaments Group, is promulgated herewith. The recommendation of nations to use this publication is recorded in STANREC 4780.

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RECORD OF RESERVATIONS

CHAPTER	RECORD OF RESERVATION BY NATIONS
Note: The reservations listed on this page include only those that were recorded at time of promulgation and may not be complete. Refer to the NATO Standardization Database for the complete list of existing reservations.	

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RECORD OF SPECIFIC RESERVATIONS

[nation]	[detail of reservation]
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CHAPTER 1 INTRODUCTION

1.1. Purpose of the document

The purpose of this document is to define dismounted soldier system (DSS) physical load configurations to support interoperability and assist in the development, acquisition and evaluation of DSS equipment. It will be of use to the materiel acquisition community, those involved in setting requirements for DSS equipment, and in the research and development, testing and evaluation DSS equipment. It will also support the drafting of interoperable and common doctrine in the area of DSS.

Furthermore the purpose is to establish the principles for the design of individual load-carrying equipment for combat soldiers of the NATO land forces and of those elements of the NATO naval and air forces who fight in a ground role. It is recommended that nations apply the principles below when designing individual load-carrying equipment.

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CHAPTER 2 DEFINITIONS

2.1. Individual Load-Carrying Equipment

The equipment such as load bearing vests, packs, pouches, straps, belts, etc. for carrying the various items borne by a combat soldier in the field in addition to their clothes and weapon.

2.2. Assault/Fighting Order

Assault/Fighting Order consists of the essential weapons, ammunition, rations, batteries, water, personal protective equipment (PPE) and other items defined by the nation as being, required for the duration of the tactical activity. It enables a soldier to remain as light and agile as possible whilst including everything that they require to survive and fight for limited duration.

2.3. Patrol/Approach-March Order

Patrol/Approach-March Order includes assault order and a daypack in which additional ammunition, rations, water, clothing, and other personal/unit equipment are carried. It enables a soldier to operate, sustain themselves and fight for up to 24 hours away from a base location with limited to no resupply.

2.4. Marching Order

For missions 24-72 hours in duration. Marching Order includes Patrol/Approach-March Order plus a pack in which are carried all rations, clothing, and equipment required for operations up to 72 hours in duration. It enables a unit to move around the battlefield efficiently by any means. A unit equipped with Marching Order can operate, sustain itself, and fight with only the need to resupply consumable items such as ammunition, rations, batteries and water.

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CHAPTER 3 PRINCIPLES

3.1. Specified principles governing the design of the individual load-carrying equipment of the combat soldier

Load carriage equipment is to be designed to meet the following criteria:

a. To be sufficiently versatile to enable load to be varied according to the mission of the combat soldier, as well as the terrain and climatic conditions in which they are to operate in. It is to be noted that most nations provide for three main variations based on the definitions in Chapter 2; Assault/Fighting Order, Patrol/ Approach-March Order and Marching order.

b. To provide via incorporation of rapid doffing/quick release mechanisms, the possibility of converting marching order into fighting order in the event of a change in tactical situations or contact with enemy, without having to remove the whole of the equipment.

c. To provide the combat soldier functional range of motion with as little restriction or increased effort as possible whilst performing their duty.

d. To enable fast and easy access to the respirator, ammunition and Chemical, Biological, Radiological and Nuclear (CBRN) protective items without assistance of another individual. Nations to define measurement for “fast and easy”.

e. To enable the load to be balanced to exert a minimum of stress, strain, shearing forces and localized pressures on the soldier. The design should introduce minimum deviations from normal posture and gait.

f. To provide adjustability of equipment to account for any changes in the configuration of PPE or bulk of the clothing being worn without prejudicing the distribution of the load, or the efficiency of its carriage.

g. To cause minimum interference with the usability of combat clothing, including access to pockets, whilst being compatible with:

   (1) ballistic protection to the head and body;

   (2) all environmental and operational clothing;

   (3) operational equipment that the soldier may be expected to wear in battle.

(4) any seating or fighting stations in combat vehicles, aircraft and combat vessels.

h. To ensure the number of items composing the load-carrying equipment[1] are kept to the minimum required to meet the requirements as defined in Chapter 2.

i. To ensure that the entire load-carrying equipment is easy to assemble and quick to put on and take off, with minimum effort, day or night.

j. To reduce to a minimum snag hazards in the design, such as shifting, swinging and flapping of component parts.

k. To ensure that openings and closures are accessible, have acceptable ease of use with or without gloves and provide a barrier to foreign material such as water and sand.

l. To ensure that equipment stays secure within its pouch and that adjustments can easily be made to the fit of the equipment are easy to operate and secure and that.

m. To leave the chest and front of the combat soldier, wearing fighting order, as free as possible of load-carrying compartments to allow access to key commodities such as magazines.

n. To minimize straps across the chest that do not aid the positioning of load bearing shoulder straps and any tight straps over the abdomen, other than a belt.

o. To be, as far as if possible:

(1) Lightweight and comfortable, but sturdy and durable.

(2) Easily adjustable and securable to accommodate changing clothing layers or the removal or addition of fragmentation and ballistic protection.

(3) Water-resistant and resistant to rot and fungus.

(4) Resistant to a small igniting flame, and self-extinguishing as defined by nations.

[1] The load-carrying capacity of the combat clothing may be designed to reduce the number of items required in the load-carrying equipment but load borne in clothing pockets must be accounted for in the total load to be borne by the soldier.

(5) Designed to provide ventilation where large areas of equipment are in contact with the body.

(6) Colour-fast and requiring no renovating cleaning agents.

(7) Noiseless: not generating any undesirable noise.

(8) Easy to maintain and repair by user in the field.

(9) Resistant to petrol, oil and other lubricants.

q. The camouflage requirements are to be that:

(1) If only one shade or tint is employed, it should comply as closely as possible with the characteristics of NATO Infra-red Reflective (IRR), matching the background for which it is designed. Visual colour should have a similar luminance as background environment deployed in.

(2) If the combat clothing of a nation is a mixture of colours in a disruptive pattern (DP), it is advisable that the load-carrying equipment is camouflaged in the same pattern, at least for those components made from materials wide enough to accept the pattern. Component parts must not exhibit very high or low IRR. Alternatively, a DP removable cover may be employed. The DP pattern is intended, as in the case of combat clothing, to meet the performance specification as defined by the nation.

(3) The gloss from the exposed surfaces is to be as low as possible, whether the material is either wet or dry, as defined by the nation.

(4) Under the same conditions of illumination it is desirable that the luminance characteristics of the exposed surfaces are to match those of the background as defined by the National Authority.

(5) Camouflage should reflect protection capabilities versus current and future detection capabilities i.e. Shortwave Infra-red (SWIR).

The above guiding principles are NOT listed in any particular order of priority as they are mostly interdependent.

When load-carrying equipment is worn over body armour, or when the load-carrying equipment is integrated in a body armour system, it may be necessary to accept that these principles and characteristics will, to some degree, be sacrificed.

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