NATO STANDARD

AMedP-1.18

REQUIREMENTS OF GROUP OPERATIONAL RATIONS FOR MILITARY USE

Edition B, Version 1

JUNE 2025

NORTH ATLANTIC TREATY ORGANIZATION

ALLIED MEDICAL PUBLICATION

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NORTH ATLANTIC TREATY ORGANIZATION (NATO)

NATO STANDARDIZATION OFFICE (NSO)

NATO LETTER OF PROMULGATION

18 June 2025

1. The enclosed Allied Medical Publication AMedP-1.18, Edition B, Version 1, REQUIREMENTS OF GROUP OPERATIONAL RATIONS FOR MILITARY USE, which has been approved by the nations in the MILITARY COMMITTEE MEDICAL STANDARDIZATION BOARD, is promulgated herewith. The agreement of nations to use this publication is recorded in STANAG 2937.

2. AMedP-1.18, Edition B, Version 1, is effective upon receipt and supersedes AMedP-1.18, Edition A, Version 1, which shall be destroyed in accordance with the local procedure for the destruction of documents.

3. This NATO standardization document is issued by NATO. In case of reproduction, NATO is to be acknowledged. NATO does not charge any fee for its standardization documents at any stage, which are not intended to be sold. They can be retrieved from the NATO Standardization Document Database (https://nso.nato.int/nso/) or through your national standardization authorities.

4. This publication shall be handled in accordance with C-M(2002)60.

For Thierry POULETTE
Major General, FRA (A)
Director, NATO Standardization Office

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RESERVED FOR NATIONAL LETTER OF PROMULGATION

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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 Documents Database for the complete list of existing reservations.	

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RECORD OF SPECIFIC RESERVATIONS

[nation]	[detail of reservation]
CZE	AMedP-1.11 (C)1 RD 1, chapter 2.6.4 – The information on the amount of potable water is not available without opening the individual operational ration. Water is only needed to prepare drinks and dehydrated meals. AMedP-1.18 (B)1 RD 1 – CZE does not currently have this type of operational food rations implemented.
HRV	The reservations relate to the content of vitamin K and fluorine for which it is not possible to meet the minimum standard defined by document SRD-2 – Mandatory Minimum Nutrient Content Requirements, Operational Ration. The reservations also relate to the content of choline, molybdenum, manganese, biotin, copper and chromium for which it is not possible to meet the minimum standard defined by document SRD-3 – Additional Nutrient Content Recommendations, Operational Ration. Considering the stated optimal storage temperature in the range of 0 to 25°C, the optimal storage temperature of operational rations in the Croatian Armed Forces is in accordance with the declared storage conditions of individual operational ration packages: "in a dry place and at room temperature" (range 15 to 25°C).
NLD	The Netherlands do not procure, produce or provide group rations, therefore AMedP-1.18 will not be implemented.
SVK	At present Slovak Armed Forces do not procure materiel as listed in AMedP-1.18 and its acquisition in near future is questionable.
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 Documents Database for the complete list of existing reservations.	

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CHAPTER 1 INTRODUCTION

1.1. BACKGROUND

1. The Committee of the Chiefs of Military Medical Services in NATO (COMEDS), composed of senior military medical authorities of member countries, serves as the central activity for the development and coordination of military medical matters across several related topic areas and for providing medical advice to the NATO Military Committee. COMEDS objectives include improving and expanding arrangements between member countries for coordination, standardization and interoperability in the medical field and improving the exchange of information relating to organizational, operational and procedural aspects of military medical services in NATO and Partner countries. This work is coordinated with other NATO bodies with responsibilities in the medical field to include the NATO Standardization Office. To assist in carrying out its tasks in these areas, COMEDS has a number of subordinate working groups which meet and address these matters within specific topic areas.

2. The Food and Water Safety and Veterinary Support Panel (FWSVS P) was established by COMEDS to initiate, develop and institute common principles, policies, doctrines, concepts, and procedures for advice to COMEDS and for standardization and coordination. The work of this panel will enhance interoperability within food and water hygiene, technology and inspection of veterinary medicine aspects in the operational environment.

3. The revised standardization agreement recorded in STANAG 2937 and detailed within supporting documentation (Allied Medical Publication-1.11 and Allied Medical Publication-1.18) are the result of the collaborative technical input of a custodial team (CT) under the supervision of the COMEDS FWSVS Panel comprised of representatives from participating member nations. This body is able to draw upon the collective experience of its members in military field feeding and food service operations to include relevant work of the NATO Research Task Group (RTG) HFM 154, Nutrition Science and Food Standards for Military Operations (March 2010), which provided science-based recommendations to the Human Factors and Medicine Panel to develop standards for nutrition, packaging, and group operational rations that support deployment doctrine and missions.

1.2. PURPOSE

The purpose of this AMedP is to provide the necessary details and information in support of STANAG 2937 and to assist and facilitate the effective interoperability of NATO military forces and partner nation’s group operational rations during military deployments, exercises or operations.

1.3. AIM

1. The aim of this publication is to improve interoperability of NATO military forces by standardizing the essential minimal characteristics and quality assurance of group operational rations and provide guidance for supplying these rations. This common set of standards will provide the primary tool to enable multinational interoperability and to support enhanced operational effectiveness in the planning and execution of field feeding and subsistence support of joint and combined operations for alliance missions. The result of this collective effort will be a common expectation and output designed around shared knowledge and expertise that will serve as an achievable capability multiplier. This standard reflects performance requirements that align with interoperability goals and satisfy current military needs and broad mission requirements.

2. STANAG 2937 and this publication acknowledge and reference related agreements only to the extent that there are important collateral influences on the functionality, performance and consumption of group operational rations as a result of availability of potable water and its dietary contribution, effective logistics planning ranging from product design to supply chain processes, the necessity of predictable and reliable food safety and hygiene, and the ability to meet user expectations in all operational environments. The core of this agreement will focus on those design characteristics that will broadly support the provision of group ration systems that meet specific military operational requirements and capabilities. These attributes will ensure nutritional needs (energy, macro- and micro-nutrients) of individuals who operate across a range of environmental conditions, often under arduous physical demands, are consistently met; that food components will be safe and highly acceptable to promote consumption; and that the ration systems will be shelf stable and durable to survive the rigors of the intended operational environment as well as those of the supply chain itself. These standards are essential to deliver a critical sustainment capability that will nourish and enhance the mental, physical and military task performance of personnel particularly during sustained operations in all environmental extremes and operational scenarios to enable mission execution and success.

3. The agreement is based on minimum standards mutually agreed upon by the NATO-Nations. Values, measures, parameters and specifications, which are mandatory are verbalized with “shall, must, have to or similar”. “Minimum Standard Requirements” are mandatory. Aside from strict specifications, recommendations are part of these documents as well, which are verbalized with “should, would, recommended, desirable or similar”. This should be recognized during ratification and writing ratification responses. To have or produce special purpose rations and as well the described examples for special purpose rations are a recommendation as well.

CHAPTER 2 GROUP OPERATIONAL RATIONS

2.1. INTRODUCTION

1. Group Operational Ration are shelf stable rations used to feed more than one person. It is designed to provide a complete meal for a set number of soldiers, in locations where group field feeding would not otherwise be possible. It provides all of the items necessary for a complete meal, including hot and cold foods, snacks/candies, condiments, drink pouches and beverage bases.
This may include group serving trays, compartmented dining trays, disposable eating and serving utensils, napkins, wet-naps, and trash bags unless it is provided with kitchen equipment and/or soldiers` personal equipment.

2. Group operational rations (group rations) are designed to provide balanced, nutritionally complete sustainment for deployed units to feed more than one individual at a time. This ration category provides a critically important field feeding capability and addresses the potential gap between individual operational rations and fresh food feeding that exists as a result of supply chain, infrastructure, or logistics shortfalls or operational constraints on the battlefield. This results in three feeding options:

- Individual operational rations
- Group operational rations
- Fresh food feeding

3. All group rations and components are shelf stable and offer increased variety over individual operational rations. Use of group rations also provides greater flexibility to units, offers the ability to conduct consolidated or remote site group feeding operations, enables increased dietary and menu options, and helps enhance overall acceptability, intake, quality of life, and maintain performance for deployed soldiers as a result of shared dining experience. Depending on the application and infrastructure, two types of group rations are identified, ready-to-eat and cook-prepared group rations which are described in more detail below.

4. To the extent possible, the different components of the group ration meal (entrée, starch, vegetable, dessert) will be served separately. Portion control is very important to provide appropriate nutrition and to ensure proper planning of ration quantities.

2.2. FEEDING CONCEPT

1. Military field feeding operations must be compatible with the full range of potential military actions and deployment options associated with modern warfare and a broad spectrum of military operations and environments encountered by NATO forces. These include collective defense, crisis management, and cooperative security activities. This is the responsibility of the operational Command and logistics elements.

2. Common elements across all military Service field feeding programs consist of the right mix of rations, equipment, personnel and training in order to support commanders in a broad range of military operations in all theatres from small-scale contingencies to major combat operations. The minimum feeding standard is three quality meals per day regardless of the situation or type of ration employed. The feeding concept or specific feeding plan will always be condition-based, to include the ration cycle (daily mix of rations), the issue cycle (which ration for a particular meal), and expected timeframe or transition.

3. The feeding concept addresses how deployed units or individuals are fed while conducting or executing missions. It includes operational field feeding requirements ranging from initial entry of forces at the start of an engagement up to stabilization of an area of operations with a mature theatre supply chain and support infrastructure. The feeding concept is intended to evolve from individual operational rations or special purpose rations to group feeding options including group rations or fresh feeding in accordance with STANAG 2556.

4. The feeding concept is designed to enable progressive movement of the ration cycle to an improved feeding standard over time. Units deploying to theatres with developed logistics infrastructure may immediately start at an improved ration cycle, to include the incorporation of fresh food.

2.3. READY-TO-EAT GROUP RATIONS

1. This option provides Commanders increased, condition-based flexibility to serve group meals in a variety of situations without the use of organized food service facilities, tactical field kitchens or use of remote site feeding using transported insulated containers from central field kitchens. This type of group ration can efficiently provide enhanced operational effectiveness.

2. When field kitchen platforms and/or specified trained[1] personnel are not available, these rations offer an important morale and menu break for the soldier from consuming individual rations exclusively. These group rations will typically contain a similar range of components, common elements and accessories to the individual ration meal but configured in larger group sized portions in cans, pouches or trays. This ration is typically self-contained or unitized in a single box or module to provide logistical benefits in ordering, preparation, and serving. This ration configuration provides small units an important capability for complete and wholesome subsistence with a group-served, shelf stable meal option supporting at least 10 individuals.[2]

[1] Trained personnel are individuals that have received formal cook training as required by the member nations. Training should include food safety, defense, sanitation, preparation and handling procedures.
[2] A typical design is described here. But even ready to eat group rations could be configured for less or more than 10 individuals

3. The ready-to-eat group ration category includes appropriately sized shelf stable components and all items necessary for a complete nutritionally balanced meal including pre-cooked food (entrée, starch, vegetable and dessert), drink mixes, snacks/candies, beverages, and in some cases include seasonings, condiments, dining trays, napkins, wet-naps, trash bag and disposable utensils. These rations can be eaten cold or hot and can be easily prepared with minimal to no equipment. Those rations in this category that are not self-heating are designed to be easily heated using hot water.

2.4. COOK-PREPARED GROUP RATIONS

1. Cook-prepared group rations generally require greater stability on the battlefield due to added time and resources required for preparation and serving. These cook-prepared group rations are generally configured in modules ranging from 10-50 persons that enable organized group feeding. These rations are prepared by trained food service specialists using some type of kitchen. Cook-prepared group rations will typically consist of a variety of menus in a modular configuration which includes main entrée components (protein component like meat or vegetarian product), side dishes (vegetables, starches), desserts and beverages.

2. Preparation instructions are generally written on relevant products describing the preparation of meal or component, the amount of potable water required and related preparation information. Necessary ancillary equipment like bowls, cooking pots or cooking utensils are provided as associated equipment with the kitchen. Potable water for preparation of meals and beverages is supplied from other logistics support elements.

2.5. SHELF LIFE

1. The shelf life describes the length of time a food or drink is considered suitable for use or consumption and during which the characteristics as defined in the STANAG (chemical, physical, microbiological, sensory and nutritional) are maintained or not degraded to the extent that the food is no longer edible. The ration is to be shelf stable for the specified period, under the specified conditions of storage, temperature, distribution, and packaging without the need for refrigeration. Conditions of storage and distribution may be indicated as:

- A specific time period according to a particular storage temperature;
- A series of time periods based on a specified range of temperature exposures;
- Humidity range, requirement for shade; or
- More than one of the above conditions.

The shelf life may also be indicated as a specific time period according to a particular storage temperature or a series of time periods based on a specified range of temperature exposures.

2. The shelf life of the group ration from the time of delivery from the supplier must be validated for a minimum of 12 months at a storage temperature of at least 25 °C (77 °F).
The optimal storage environment is between approximately 0 and 25 °C (32 - 77° F). Long-term transport and storage outside of these conditions may affect product safety and acceptability. Prolonged elevated or freezing temperatures may diminish packaging integrity and reduce product shelf life, and regular inspection should be conducted. Therefore, it is recommended that products be protected from environmental exposure (elevated temperatures, freezing, solar loading, etc.) throughout the supply chain.

2.6. NUTRITIONAL CONTENT

1. NATO forces include mission-ready and technologically advanced land, air, sea and Special Forces components that deploy as part of NATO responses to worldwide crises, including evacuations, disaster management, counterterrorism operations, alliance and national defense. NATO military personnel engaged in these missions will likely subsist partially or entirely on general purpose individual operational rations for extended periods. Therefore, nutrient content of such rations needs to be sufficient to maintain the health, combat readiness and performance, both physical and cognitive, of those personnel.

2. NATO military personnel will engage in a broad spectrum of tasks during NATO operational deployments, thus, the total daily energy expenditures of those personnel will span the range from that of sedentary office work to strenuous, physical labor. However, operational rations are primarily designed to meet the energy needs of personnel performing uniquely military missions. It is estimated (1) that energy expenditure of military personnel is approximately 3,600 kcal per day (15.1 MJ/d) for “normal” operations, i.e., missions comparable to urban police and peace keeping, firefighting or construction work period. Therefore, the minimum energy content for a general-purpose individual operational ration is 3,600 kcal (15.1 MJ) for a 24-hour support period (SRD-2 to AMedP-1.11). For combat operations, i.e., missions involving sustained, dismounted light-infantry or Special Forces operations 4,900 kcal per day (20.5 MJ/d) may be required. The latter was thought to be the “worst-case” or the most physiologically stressful condition. Thus, personnel in this scenario subsisting on 3,600 kcal rations and engaged in sustained combat operations without being provided with additional energy are likely to experience a negative energy balance with associated health and performance degradation.

3. To satisfy the total daily energy requirement (3,600 kcal), the NATO expert panel recommended that dietary macronutrients in an individual operational ration be distributed such that dietary carbohydrate contributes 45-65% of kcal (1, 2, 3), thus the range for carbohydrate is 404-584 g. For dietary protein content, the lower limit can be calculated using the midpoint for the range recommended for athletes (3) which is 1.5 g/kg body weight. Using the NATO “reference man” averaging 79 kg (1), the lower limit for protein content of the individual ration is 118 g or 13% of a 3,600 kcal ration. The

balance of the ration's energy content is derived from dietary fat and should be no more than 35% of the total energy content. High quality macronutrient sources are recommended as described in SRD-3 to AMedP-1.11.

4. In addition to energy and macronutrients, other specific nutrients important for maintaining health and performance are detailed in SRD-2 to AMedP-1.11, Mandatory Minimum Nutrient Content Requirements for Operational Rations. The micronutrients specified among these minimum nutrient standards are those most likely to become depleted if suboptimal levels are consumed over periods as short as a month, and those nutrients with documented storage sensitivities that could decrease the active compound or bioavailability. It should be noted that values in SRD-2 to AMedP-1.11 are minimum requirements intended to prevent the development of overt deficiency disorders during the period of use. For some nutrients, such as vitamin D, levels above the minimum requirements are recommended in an effort to prevent injury and optimize performance. There are sex differences in the nutritional requirement for iron, and women require greater levels of dietary iron to avoid the development of iron deficiency and iron deficiency anemia. Female personnel should be provided with education regarding the potential impacts of poor iron status and appropriate countermeasures throughout military service, particularly prior to and following deployment. Conversely, tolerable upper limits have been defined for most micronutrients; provision of micronutrients above these levels in operational rations must be avoided. Additional Nutrient Content Recommendations for the Operational Ration are specified in SRD-3 to AMedP-1.11, and incorporate the remaining nutrients of concern. Efforts should be made to achieve the recommended values stated in SRD-3 to AMedP-1.11.

5. Nutrient content should be confirmed at the time the ration is produced and packaged; ideally performed by an accredited laboratory in accordance with chemical analyses as described in the Official Methods of Analysis published by the AOAC International (7) or other equivalent and validated method. Commanders should understand that certain nutrients degrade during storage, particularly vitamins A, B-series, and C. Storage under high temperature conditions for long periods will worsen nutrient degradation, but storage effects cannot be predicted accurately. When subsistence on individual operational rations is extended for periods beyond 30 days, it is desirable to enhance the diet with fresh food from approved sources and increase medical surveillance for effects of nutrient deficiencies.[3]

REFERENCES:

(1) NATO (2010). Nutrition Science and Food Standards for Military Operations. RTO Technical Report TR-HFM-154: Final Report of RTO Task Group RTG-154. Research and Technology Organization of the North Atlantic Treaty Organization. Neuilly-sur-Seine Cedex, France. ISBN 978-92-837-0097-5

[3] Nevertheless, it is unlikely that persons subsisting on individual operational rations manufactured to meet the specifications in SRD-2 to AMedP-1.11 will experience any nutrient deficiencies of health significance within 30 days if they begin the deployment in good health and with normal nutritional status.

(2) National Health and Medical Research Council. Nutrient reference values for Australia and New Zealand, including recommended dietary intakes: Australian Government, Department of Health and Ageing; 2006.

(3) Position of the Academy of Nutrition and Dietetics, Dietitians of Canada, and the American College of Sports Medicine: Nutrition and Athletic Performance. J. Am. Diet. Assoc. 111(3):501-28; 2016.

(4) Combs, GF Jr. and McClung JP. The Vitamins: Fundamental Aspects in Nutrition and Health - Fifth Edition. Burlington, MA, Elsevier Academic Press; 2017.

(5) Institute of Medicine. 2000. Dietary Reference Intakes: Applications in Dietary Assessment. Washington, DC: The National Academies Press.

(6) European Food Safety Authority. Summary of Dietary Reference Values – Version 4. EFSA Supporting Publications, 14(11); 2017.

(7) AOAC International. Official Methods of Analysis, 18th Ed. Gaithersburg, MD, USA, 2005.

2.7. INTEROPERABILITY

Interoperability of rations is influenced or determined by a large number of factors to include acceptance by user personnel, nutritional aspects, and collateral issues such as specific or unique legislation, food restrictions, and supply chain management. This section will focus exclusively on the functional considerations that may preclude full interchangeability of rations when used by multinational NATO or alliance forces. These functional factors may affect the planning phase and/or the actual consumption of the ration during military operations.

2.7.1. Ration Volume and Weight

During the design of an operational ration, the product developer or technologist should give sufficient consideration to the ration volume and weight in order to achieve the smallest and lightest ration possible that satisfies the range of logistical and mission requirements.

2.7.2. Palletizing of the Ration

1. Operational rations are typically grouped in fiberboard boxes that are in turn stacked on a pallet as a unit load. It is recommended that the rations be stacked on NATO type pallets (1200 x 1000 millimeters) for standardization purposes. Pallets must

be free from foreign material and/or growth(s) such as, but not limited to, adhering dirt, filth, mud, mildew, mold, etc[4].

2. The boxes should be uniformly arranged in a pattern that results in efficient utilization of the pallet's entire surface area. These boxes should be stacked to form a compact squared load centered on the load base and squared with all corners of the pallet with no overhang. The boxes of each pallet load should also be interlocked where possible by reversing the pattern in each layer. Consideration should be given to the dimension of the case and pallet to facilitate interlocking.

3. Pallet loads must be properly and sufficiently secured utilizing straps, shrink or stretch films, netting and/ or caps such that the load will be secure, stable, and provide added protection against moisture, dust and contamination under shipping, handling and distribution rigors without causing damage to the boxes.

4. The quantity of operational rations on a pallet must be readily identified and clearly and legibly marked on the pallet unit load.

5. The height and weight for a single pallet position, including the pallet(s), should not exceed 2.2 cubic meters and 1000 kg respectively. A pallet of rations should contain different menus to increase variety.

2.7.3. Required Equipment

1. Ready-to-eat – It is desirable that all necessary equipment to heat, serve and consume the ready-to-eat group ration be included in the ration. However, in those instances where it is restricted or simply not practical or feasible to include all required equipment in the ration, the issuing country shall establish a NATO Stock Number (NSN) for a set containing the ration and all the necessary equipment to heat, serve and consume the ration. These unique set NSNs should be used when rations are ordered and issued in multinational settings. The use of sustainable products is recommended.

2. Cook-prepared – These group ration types require trained personnel and appropriate kitchen equipment that enables pan frying and/or ability to boil water. Baking capability is desired in some instances. It is desirable that all necessary equipment to serve and consume the ration be included in the ration. In those instances where it is restricted or simply not practical or feasible to include all required equipment in the ration, the issuing country shall establish a NATO Stock Number (NSN) for a set containing the ration and all the necessary equipment to serve and consume the ration. These unique set NSNs should be used when rations are ordered and issued in multinational settings. The use of sustainable and functional products is recommended.

[4] International Standards for Phytosanitary Measures No. 15 (***ISPM 15***) certification is recommended

2.7.4. Water Requirements

The vast majority of operational group rations require potable water to reconstitute dried or dehydrated components and/or rehydrate powdered beverages or drink mixes. The amount of potable water required to prepare group rations can vary significantly as some rations require water to reconstitute beverages only while others also require water to rehydrate the main course or entrée. The amount of potable water needed to prepare a ration is an important planning factor to ensure the ration can be consumed as intended providing both nutrition and increased acceptability. It is therefore, required that this information be made widely and readily available to support operational planning. The information of the amount of water needed is required for operational planning. There is no need for outer package declaration. Operational planners have to understand the amount of water which must be supplied to each user to prepare the items in the ration. This could be done by general declaration, supply declaration etc.

2.7.5. Food Packaging

1. Protective packaging of components or items in a ration that are typically in contact with the product or food items must be food grade and is referred to as primary packaging. Secondary packaging is that packaging which is outside the primary packaging layer and in the case of operational rations this packaging is used to group several primary packages together. Lastly, outer packaging is used to support bulk storage, shipping, and handling of product in the distribution supply chain. Rations are grouped at this level in fiberboard boxes or cases and subsequently palletized as unit loads for ease and efficiency of handling and distribution.

2. It is preferable that the packaging be easily opened without specific tools. If specific tools are required, they should be included in the ration, or alternatively a set should exist containing the ration and all necessary specific tools.

3. Primary and/or secondary packaging should be waterproof. Secondary packaging should be insect resistant. Outer packaging must be water resistant.[5]

2.7.6. Labeling

1. The net weight should be declared on the packaging of a ration. Outer packaging must mention the production date and/or best before date at least as an ordinal date (year + number between 1 and 366, 1 being January 1st), Julian Date or in the day/month/year format (e.g., 01 Jan 2011). The date will be identified as production date and/or best before date[6].

2. The food items should be identified on the primary package of these items. Food components must also have an ingredients list where appropriate. Legally mandatory national labeling elements, such as allergens, must be included on the

[5] Water resistant is the ability of packaging material or barrier property to slow the transmission of water but not prevent entirely the penetration of water.
[6] for Canadian rations the terms packing date and expiry date are used instead.

packaging. The instructions for proper preparation and consumption should be printed on each of the components or provided with each ration as appropriate. Non-food components should be identified and labelled with instructions for use when appropriate.

3. The number of servings must be identified on the outer packaging or be readily available.

2.7.7. Metric vs. Non-Metric

The use of disparate or unfamiliar units of measure on packaging and other product labelling requires soldiers to convert to some familiar baseline and may result in errors during preparation of meals and beverages. This lack of standardization may potentially and unnecessarily complicate the distribution, handling, and intended use of the ration and adversely affect component use, overall ration consumption, and user satisfaction. It is advised that all ration or component measurements be indicated in metric units and if deemed necessary, accompanied by the equivalent non-metric unit.

2.7.8. Language

1. Often the only direct way to communicate with soldiers preparing a group ration is through labelling provided directly on the ration and components themselves. This information is critical to ensure and encourage proper use, consumption, and identify cautions, warnings, or safety of use messages for components where a burn, cut, ingestion or other hazard or safety concern may exist. The language issue takes on considerable significance during an exchange of rations among multinational forces which may be necessary due to disruption of supply chains and logistic shortfalls during operations or exercises, particularly in the absence of, or limitations in joint training, exposure or use of exchanged ration systems.

2. The nomenclature of the ration and/or menu is considered minimum essential information and shall thus be clearly identified on the ration (outer packaging) in at least English. The additional use of French is recommended. It is also highly desirable that additional information regarding the ration such as component listings, instructions for proper use or preparation, and safety warnings be provided in English and French.

2.7.9. Water Treatment

1. Group Rations need potable water sources meeting the standards of STANAG 2136.

2. Planners should put maximum effort in providing forces with ample amounts of potable water. The importance of water logistics cannot be overstated. Hydration requirements will be influenced by the operational tempo, mission, geography and climatic conditions. The provision of ample amounts of potable water by suitable means of conveyance is the best way to alleviate the need for water treatment and this is a reliable way to avoid problems with the provision or use of water treatment

products. Ample provision of potable water for sustainment may still not fully eliminate the need for water treatment in all situations, particularly in operations where field expedient water sources may be necessary based on environment, deployment and battlefield threats encountered. In this case, it is recommended that the water treatment equipment be provided separately and be accompanied by clear instructions regarding its use (even if some means of treatment is already included in the ration). This is a sure and safe way to provide adequate means for any specific situation and minimize the risk that the water treatment products provided are used incorrectly due to insufficient training and/or lack of clear instructions.

3. While water treatment items are not required in the ration, if any water treatment items are included in the ration, their outer packaging should clearly mention that these items are for water treatment only (and not for direct consumption). In this case, clear instructions for use should be provided on the primary packaging of the items or with the secondary packaging.

2.7.10. Waste Bag

Some rations include a separate bag intended for collection and disposal of packing materials or packaging waste generated from consuming/using the ration components. Proper disposal of packaging waste may be of tactical importance during operational situations. It is highly desirable that the ration include such a bag.

2.7.11. Religious/Ethnic/Cultural needs

1. The broad religious, ethnic, and cultural diversity among NATO alliance partners is acknowledged. This multiplicity of force composition and broad spectrum of use for rations also dictates variety in menus.

2. It is recommended that the variety of menus issued in the ration contain at least one menu that is vegetarian. Issuing menus/rations that meet specific ethnic or religious requirements/dietary restrictions (e.g., Halal, Kosher) remains a national responsibility.

2.7.12. National Requirements

1. Each nation has its own specific set of comprehensive rules, regulations, and legislation/governance with respect to food production to ensure public health, consumer protection, and nutritional adequacy. Cross-checking diverse, sometimes dissimilar national requirements among all NATO nations and standardizing rations based on the consolidation of these collective requirements, is both an unrealistic and unachievable goal.

2. An operational ration shall contain only items or components that do not harm the health and wellness of a normal, healthy individual. This means that while a ration may not meet all national requirements of another partner country, its consumption will

neither result in adverse health, nutrition or dietary conditions nor present issues in operational performance, readiness or routine fitness for duty.

3. If a nation considers any specific national requirement (e.g. trans fats, genetically modified organisms) to be of such magnitude, significance, or health concern that would preclude their consumption, it is up to this nation to monitor compliance and take appropriate actions as warranted. This may include prohibiting personnel from consuming non-complying rations and exercising alternative feeding plans.

2.7.13. Safety Warnings

Any safety warnings related to preparation, consumption and use of the ration or its components must be clearly identified on each ration. The warnings shall appear in at least the two official NATO languages or be conveyed through the use of a suitable warning pictogram that clearly and universally conveys the intended message. This requirement also applies to specific tools, heaters, and fuel issued separately.

2.8. ACCEPTANCE

2.8.1. Important Factors That Enhance Ration Intake

With reference to food, the process by which individuals accept or reject food is multi-dimensional in nature. In order to ensure adequate consumption of operational rations one must consider a broad range of variables which include the person, the product, and the environment. To enhance nutritional intake and acceptability, ration composition should optimize sensory attributes.

2.8.2 Eating Behavior

Eating Behavior is how well a food is liked and how much is consumed. Sensorial aspects such as appearance, odor, flavor, texture, taste and color must be taken into consideration when evaluating operational rations. The following aspects are likewise important when designing the ration:

a. Food variety and monotony (minimum number of days before repetition of a meal)
b. Ease of use
c. Meal duration
d. Location during consumption
e. Serving temperature
f. Duration of use (number of days of continuous, uninterrupted, exclusive consumption of the ration, as approved by competent national medical authorities)
g. Socialization and community behavior
h. Religious, ethnic and cultural influences

2.8.3. Menu Fatigue

1. To avoid menu fatigue resulting from lack of variety in the ration, all 24-hour operational rations should, at a minimum, include:

a. Main courses (breakfast, lunch, dinner, or unspecified) generally intended to be eaten heated;

b. Snacks, savory and sweet (bars, chocolates, caramels, dried meat, nuts, crackers, cookie etc.);

c. Beverages, hot and cold (coffee, tea, hot chocolate, sports drinks, etc.);

d. Spreads (cheese, jam, peanut butter, etc.) and breads.

2. The NATO report cited previously, (1) concluded that the acceptability and consumption of each of the ration components described above will increase if the products are familiar to the soldier. Therefore, it is recommended that commercially available (recognizable) labels/branded products be utilized to the extent practical.

3. The menu cycle shall offer variety to minimize repetition.

2.8.4 Product Evaluation

All ration components (both food and nonfood) should be evaluated for usability and acceptability and using a 9-point scale by evaluators that are representative of the end user or target audience (SRD-1 to AMedP-1.11 EXAMPLE FOR HEDONIC SCALE - Product Evaluation Questionnaire for Food Items). For sensory acceptability no ration component should be included in the ration with a mean score lower than 6.0 for overall quality. Acceptability testing should be conducted by a statistically sound number of sensory evaluators. Instances where acceptability testing should be performed are:

a. When introducing a new ration component;
b. Field acceptability confirmation including both sensory and operational suitability of all components.

Repeat acceptability testing should be done on a regular basis to assure continued acceptability.

REFERENCE:

(1) NATO (2010). Nutrition Science and Food Standards for Military Operations. RTO Technical Report TR-HFM-154: Final Report of RTO Task Group RTG-154. Research and Technology Organization of the North Atlantic Treaty Organization. Neuilly-sur-Seine Cedex, France. ISBN 978-92-837-0097-5

2.9. QUALITY, FOOD SAFETY, TRACEABILITY AND FOOD DEFENSE

2.9.1. Production of Group Rations

2.9.1.1. Quality

1. The quality of a product can be determined by comparing a set of inherent characteristics with a set of requirements. If those inherent characteristics meet or exceed all requirements, high or excellent quality is achieved. If these characteristics do not meet all requirements, a lesser quality level may result and most importantly, may render a product unsuitable for use and unacceptable by the requiring or procuring activity. Quality assurance is a set of planned and systematic activities intended to establish confidence that quality requirements will be met.

2. The ration should meet the minimum criterion established in this document and other relevant standardization documents. The contracting authority or representative reserves the right, at any time, to inspect any part of the manufacturing/production process.

3. The critically important steps of the supply chain shall be subject to an International Standards Organization (ISO) 9000 series quality approach, U.S. Department of Agriculture certification or other equivalent process for the production of components, assembly and packaging of rations prior to acceptance by the procuring activity and shipment to units for consumption.

a. The selection of suppliers and vendors should be based on identified and well defined administrative and technical specifications or performance characteristics to ensure the reliability and fitness for use of the product.

b. The rations components, subcomponents and raw materials should be available for inspection at any time prior to issue and distribution by representatives of the end user nation.

c. The contracting authority should have in place a plan to deal with a food recall or alert event and have a technical subject matter expert available to address or advise on matters related to the incident and relevant products involved.

2.9.1.2. Food Safety

1. Food safety is the proper handling, preparation, and storage of food in ways that prevent food borne illness. This includes a number of routines and guidelines of acceptable practice that should be strictly followed to minimize the risk of potentially severe health hazards. Respective government agencies are responsible for setting food safety standards, conducting inspections, ensuring that standards are met, and maintaining a strong enforcement program to deal with those who do not comply with

standards. The preparation, packaging and storage of food shall meet the minimum requirements of the end users.

2. Each supplier must purchase from approved sources and implement a process of hazard analysis and risk management (e.g. Hazard Analysis & Critical Control Points (HACCP)) and be evaluated on the effectiveness of the plan or management system in at least one of the following ways:

a. Systematic monitoring of manufacturing components;

b. Regular audits based on a predetermined reference standard (e.g. ISO 22000, International Food Standards, and British Retail Consortium).

3. Microbiological and chemical criteria should be European Union or U.S. regulatory compliant (e.g. European regulation 2073/2005 or U.S. Food and Drug Administration regulations). Testing shall be performed by laboratories accredited in accordance with ISO 17025, or similar standard, or governmental laboratories for the actual ration analyses they are performing. STANAG 2556, AMedP-4.5 provides minimum standards and is a useful guide for auditing of suppliers.

2.9.1.3. Traceability System

1. The traceability system is a technical tool to assist an organization in conforming and meeting defined objectives, and is applicable when necessary to determine the history, application, or location of a product or its relevant components. Traceability systems can be used to improve supply management, facilitate trace back for food safety and quality; and trace product variation.

2. Procedures and tools to ensure traceability at all stages of raw materials to finished products including production, packaging, storage, and food distribution operations (e.g. inventory management and traceability via bar codes, lot number[7], etc.) should be implemented. This traceability includes the origin of any components and ingredients. Thus, the contracting authority and supplier will be advised that:

a. It is desirable to establish traceability backward (upstream), such that rations are fully traceable to their origin and history within 48 hours.

b. It is desirable to establish traceability forward (downstream), such that capability exists to identify distribution paths of the product (ration) within 48 hours. An alert system is also required to stop product consumption and a recall system for suspected noncompliant products.

[7] The Lot number refers to a set production run of an item. This lot number is then the identification number assigned to a particular quantity or lot of materials from a single manufacturer and having uniform quality and characteristics because they were produced under the same conditions. Items in a lot are identical in size, type, conditions and time of production.

3. Participating nations agree to establish a procedure for proper notification or warning considering areas of reasonable health concern.

4. The traceability system must be periodically tested, evaluated, and improved as needed.

5. It is recommended that all data relating to the traceability of components and rations be retained for one year beyond the end of the marked shelf life.

2.9.2. Field Hygienic Conditions for Group Ration Use

1. The provision of cook-prepared group rations under certain deployment conditions may result in increased risk of foodborne illness due to more complicated handling practices compared to ready to eat group rations.

2. It is important to control food safety hazards through the life cycle of the ration. This includes transport, food storage or distribution, food preparation, cooking, service and recovery of leftovers, and waste management.

3. Relevant food safety practices and additional information are provided by STANAG 2556 and AMedP-4.6 to help make and keep food safe for human consumption.

2.9.3. Food Defense

1. Food Defense involves the precautions taken to prevent intentional contamination of food/water or the food/water supply by individuals or groups that want to inflict harm to NATO operations. It differs from general food safety in that food safety relates to the unintentional contamination of food. Although Food Defense is a separate concept, Food Defense measures need to be incorporated into the food safety system to ensure prevention measures are place within food services and food supply operations along the food chain. It is recommended that further information be utilized as provided in STANAG 2556 AMedP-4.12.

2. Intentional contamination of food can have a devastating effect on human resources. It erodes morale and confidence in the food safety system, but also can cause loss of life and/or a reduction in force readiness and mission capability. Effective Food Defense measures must be in place to ensure that intentional harm to the food safety system does not occur. From this perspective, all food catering and food or water company personnel have a responsibility to do their part in preventing intentional contamination of food by being vigilant and reporting any suspicious activities involving food and water.

It is recommended that participating nations ensure protective measures are instituted to mitigate this risk, to apply recommendations, and use tools described in STANAG 2556, AMedP-4.12 Food and Water Defense standards in deployed operations.

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CHAPTER 3 REQUIREMENTS FOR SUPPLY

3.1. TECHNICAL SPECIFICATIONS

The technical specifications used in tenders for acquiring rations must contain the minimum requirements contained in accordance with this document. Any end user needs or requirements not addressed in this publication should be included in the tender as supplementary technical specifications, for example, assembly contract requirements, specific national requirements, sourcing requirements (i.e. sustainable, genetically modified organism, etc.).

3.2. COOPERATION DURING THE ACQUISITION PROCESS

Any contracting authority (e.g. NATO's contracting authority) must communicate with end user nation´s technical authorities specialized in operational feeding throughout the contracting process in order to meet the end user needs. These needs may include operational considerations as well as other aspects such as sustainable production methods of the components, respecting national legislation, etc.

3.3. PRODUCT INFORMATION

The contracting authority must provide all information relevant to the contract on the rations to the nation's technical authority if requested. In order to do so, technical data sheets, pamphlets, booklets, etc. could be used.

3.4. LEAD TIME

Lead time for delivery of rations must be agreed to with the contracting authority and contractor. Maximum lead time must be determined in the technical specifications of the tender.

3.5. SURGE CAPACITY

The contracting authority must validate whether or not the contractor has the capability to meet surge requirements for rations within a specified period of time, if requested.

3.6. LAB ANALYSIS, SHELF LIFE, VALIDATION AND SENSORY TESTING

The contracting authority (in conjunction with the requiring nation`s technical authority) is responsible for ensuring compliance for laboratory analysis, shelf life validation and sensory testing, as described in this document.

3.7. CONFORMANCE

During the execution of the contract, the contracting authority (in conjunction with the requiring nation's technical authority) is responsible for ensuring compliance of the delivered product against the technical requirements of this document.

3.8. WAIVERS, DEVIATIONS, AND NON-CONFORMANCE

The contracting authority must establish procedures to address waivers, deviations and non-conformance of the technical requirements detailed in the contract.

3.9. AUDITING

The contract should allow for documentation and physical auditing at any time during the production, distribution and storage process.

3.10. ENVIRONMENTAL AND SOCIAL RESPONSIBILITY

Participating nations agree to encourage the purchase of environmentally friendly and socially responsible products (e.g. Fair Trade; Marine Stewardship Council; Round Table on Sustainable Palm Oil Standards; recycled and/or recyclable packaging; organic production methods; etc.).

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