NATO STANDARD

AMedP-4.6

FOOD SAFETY, DEFENCE, AND PRODUCTION STANDARDS IN DEPLOYED OPERATIONS

Edition B, Version 1

MARCH 2019

NORTH ATLANTIC TREATY ORGANIZATION

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NORTH ATLANTIC TREATY ORGANIZATION (NATO)

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NATO LETTER OF PROMULGATION

29 March 2019

1. The enclosed Allied Medical Publication AMedP-4.6, Edition B, Version 1, FOOD SAFETY DEFENCE, AND PRODUCTION STANDARDS IN DEPLOYED OPERATIONS, 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 2556.

2. AMedP-4.6, Edition B, Version 1, is effective upon receipt and supersedes AMedP-4.6, Edition A, Version 1, which shall be destroyed in accordance with the local procedure for the destruction of documents.

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

Zoltan GULYAS
Brigadier General, HUNAF
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 Document Database for the complete list of existing reservations.	

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RECORD OF SPECIFIC RESERVATIONS

[nation]	[detail of reservation]
CZE	1. CZE obeys the principles of good manufacturing and hygiene practices, Codex Alimentarius, hazard analysis and critical control points and national legislation based on the EU I legislation during the food distribution, stocking, and processing. The requirements stated in these documents differ from the requirements stated in STANAG 2556 Edition 2, RD 1 in the following paragraphs: a) AMedP-4.6 (B) 1, chapter 1.5.4, point 2. j.: The CZE legislation establishes the different way of storage of raw meat and meat products in refrigerator. b) AMedP-4.6 (B) 1, chapter 1.9: The CZE legislation demands different temperature and procedure regime for food handling. c) AMedP-4.6 (B) 1, chapter 1.16.2, point 1: CZE does not provide the delivery of meals in the form of individual hot meal packs. d) AMedP-4.6 (B) 1, chapter 1.16.2, point 2c., 2e.: The CZE legislation demands different handling of packed meals. e) AMedP-4.6 (B) 1, chapter 1.16.3, Annex C: The CZE legislation demands higher internal cooking temperature to be reached during cooking of meal-dishes food. f) AMedP-4.6 (B) 1, chapter 1.16.5: The CZE legislation prohibits room temperature holding of food. g) AMedP-4.6 (B) 1, chapter 1.17.1, point 3.: The CZE legislation prohibits a further storage, reheating and additional cooling or freezing of leftover, which were not issued in given time limit. h) AMedP-4.6 (B) 1, chapter 2.3, point 1: The CZE legislation does not require the periodic medical examinations of food handle personnel. i) AMedP-4.6 (B) 1, chapter 5.3.10, point 1: The CZE legislation demands the different number of non-food handler toilet. j) AMedP-4.6 (B) 1, chapter 5.3.10, point 2: The CZE legislation demands the different distance of food handler toilets from foodservice production area.

DNK	This STANAG with AMedPs, covering principles for foodproduction, -audits and – control, are considered important documents for INTOPS and e.g. outsourcing of foodproduction and DNK agree on these principles. However, DNK will not be able to fully implement on a national level, as parts of these tasks are being taken care of by civil authorities.
FRA	Implementation of AMedP-4.6 and AMedP-4.7 will be limited to stabilized theatres with so called “infrastructural” catering facilies. France will not implement the provisions of AMedP-4.6 regarding the medical support and follow up of catering staff.
GBR	UK will not implement paras 2.2 and 2.3 of AMedP-4.6(A) regarding medical screening and interventions for catering staff which conflict with national legislative requirements, guidance and policy.
SVN	AMedP-4.6, Chapter 1, Paragraph 1.16.4. – Cold Holding Temperature: Core temperature of salads is between 6 and 10 °C and not 40 °C or lower.
USA	Various and detailed reservations were submitted that have been forwarded to the document custodian for review and consideration.
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 Document Database for the complete list of existing reservations.	

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CHAPTER 1 FOOD SUPPLY AND PRODUCTION PROCESSES

1.1. INTRODUCTION

1. Safe food and water is critical to the good health, wellbeing and working ability of troops at home and on deployed operations. Freshly prepared, attractively presented, nutritious meals help build and sustain troop morale by giving comfort and providing them with a sense of security. While individual operational ration packs and approved bottled water are ways to minimize risk while sustaining troops on deployed operations, prolonged use of individual operational rations can have a substantial negative impact on troop morale. On the other hand, freshly prepared meals of the type they have at home can be a significant morale booster. However, the provision of freshly prepared meals under certain deployment conditions can seriously increase the risk of foodborne illness due to unsafe food and water supplies and poor food safety management practices.

2. Commanders and all personnel involved in the provision of food services/catering support must weigh the benefits of freshly prepared meals against the potential health risks when making decisions. By managing risk through such things as menu modification and restricting certain high-risk food items, it is often possible to provide safe freshly prepared meals under less than ideal conditions. Knowledge of food safety hazards, food safety practices and possible modifications to the food supply chain and food production processes can help manage the risk associated with the provision of freshly prepared meals on deployed operations.

3. This chapter introduces food safety hazards, and follows the flow of food through the food supply chain and food production processes. The food supply and production processes include purchasing, receipt, food storage or distribution, food preparation, cooking, service and recovery of leftovers. In the following sections, risk areas are identified for each activity within these processes. Relevant food safety practices are also provided to help make and keep food safe for human consumption.

1.2. FOOD SAFETY HAZARDS

1. There are four general types of hazards in food that can cause death, illness, or injury to consumers. They are:

   a. biological – viruses, bacteria, parasites, and moulds/fungi, yeast, any substance of biological origin that can cause food poisoning or infection;

   b. physical – glass, plastic, metal, wood chips, or jewellery; anything that can cause choking or internal injury. Other physical

contaminants found in food, eg., hair, finger nails, insects, sand, dust and dirt;

c. chemical – cleaners, sanitisers, pesticides, paint, lubricants, fuels; any chemical that can make food dangerous to eat; and

d. allergens – substances that may cause adverse reactions in sensitive persons, eg., fish and shellfish, tree nuts and peanuts, eggs, dairy products, sulphites, soy products, sesame seeds, wheat.

Although it is important to be aware of the risk posed by allergens, the prime focus of this document is on the first three categories of food safety hazards – biological, physical and chemical.

1.2.1. Biological Hazards

1. Biological contaminants pose the greatest threat because they are living organisms that can grow under the right conditions and may have produced toxic substances and they are everywhere. Not all micro-organisms are dangerous. Some are inert. Some are beneficial and useful in the production of foods such as cheeses, and fermented sausages. Other micro-organisms cause foods to spoil but do not make people sick. The dangerous ones are the pathogenic micro-organisms that cause illness and sometimes death in humans. Annex A contains a list of some of these pathogens, their source, foods involved and preventive measures.

2. In general, to keep food safe, one must prevent food from becoming contaminated and must not give micro-organisms the opportunity to grow. Contamination, cross-contamination and recontamination can take place anywhere along the food supply and food production processes.

3. Time and temperature also play a significant role in preventing the growth of micro-organisms present in food. Following are some examples of conditions related to time and temperature that avoid the growth of pathogens:

a. food preparation as close as possible to the time of consumption;

b. storage of perishable foods at temperatures specified at Annex C;

c. refrigerating foods at temperatures specified at Annex C;

d. cooking and grilling at proper temperatures (see Annex C for critical internal product temperatures);

e. thawing of frozen foods under approved conditions;

f. reheating of cooled cooked foods to proper temperatures as described in this chapter;

g. maintaining hot food at proper temperatures until consumption as described in this chapter; and

h. use approved leftovers only once before disposing.

1.2.2. Physical and Chemical Hazards

1. On deployed operations, physical and chemical food safety hazards are often more prevalent and must be guarded against. For example, insects, rodents, sand and dust may pose serious problems when the kitchen facilities lack the necessary physical barriers to keep them out of the kitchen and the food. Residues from toxic chemicals such as pesticides can be present from food sources or through improper transport of food.

6. Food safety risks can be managed by using good food safety practices that prevent, reduce, limit, inhibit or destroy the hazard. Actual ways and means to prevent and minimize all food safety risks will be identified and discussed as the following sections follow the flow of food through the supply chain and food production processes.

1.3. FOOD PROCUREMENT

Food safety begins with the selection and acquisition of food and ends with its safe consumption. The food supply and production processes include purchasing, receipt, food storage or redistribution, food preparation, cooking, service and recovery of leftovers. Each step in these processes has inherent food safety problems. In this chapter, risk areas have been identified for each step of the food supply and production processes, and relevant food safety practices are provided to help make and keep food safe for human consumption.

1.3.1. Food Contracts

1. The flow of safe food begins with reliable suppliers who currently meet inspection standards of the jurisdiction’s regulatory authority and/or operate in a manner that prevents and controls the contamination of food. Most nations require high risk foods to come from approved sources. Effective purchasing paves the way for a successful and safe production process.

2. Contracting for food supplies for deployed operations is a complex business. Food specification and standards vary with location and jurisdiction thus complicating the contracting process. The contracting authority must communicate with the end user nation’s military authorities specialized in catering. National food likes and dislikes, and menu patterns of the deployed

forces further complicate the process by adding to the number of items required. In addition to these factors, personnel responsible for setting up food contracts must have a clear understanding of the following:

a. in-theatre environmental conditions;

b. limitations of food storage and production facility;

c. potable water supply limitations; and

d. location and size of deployed units.

3. Contracts should include but are not limited to:

a. food supplier selection;

b. description of the items and of the quality standard required, e.g. pasteurized whole milk; grade A, beef inside round;

c. unit size(s) and/or weights of items;

d. packaging and labelling requirements;

e. deliver/drop off points;

f. means of transport including shipping conditions and temperature monitoring, preferably with continuous data logging;

g. delivery schedules;

h. requirement to comply with inspections and allow access to facilities;

i. replacement procedures for rejected goods; and

j. Food defence considerations (see AMedP 4.12, STANAG 2556.

This level of detail in a contract provides the end user with some assurance that, first and foremost, the food entering the process is relatively safe. Without it, the safety of the food supplies is questionable and the risk to health is significantly increased.

1.3.2. Number of contracts and sources

1. Deployed operations usually take place in countries experiencing unrest or natural disasters. Under these conditions, food is often in short supply because normal supply lines have broken down. As reliable safe sources of food are not likely available, it is recommended that major national and

international wholesalers, distributors, and service providers be sought out. These companies are more likely to carry a wide range of food of recognizable specifications and quality standards from developed countries. Other NATO countries may already have approved such international companies, thus reducing the requirement to verify that these suppliers meet the essential food safety and security requirements common to most countries.

2. Where possible, the number of contracts should be kept to a minimum to reduce the workload associated with the verification of suppliers, and subsequently, to reduce the overall number of deliveries.

1.3.3. Copies of Contracts

Regardless of the food system of supply used, kitchen managers and commissary/ration management centre staff must have actual copies of the food contracts in order to select and correctly identify the food and non-food items required, and to later inspect and receive them.

1.3.4. Food Standards

Clear, detailed descriptions and quality standards are essential. Without them, a supplier is free to substitute inferior goods of questionable origin. Purchasing products that meet recognized quality standards and that come from approved food producers and processors will minimize the risk of introducing foods that are already contaminated into the production process.

1.3.5. Unit Size(s) and/or Weights of Items

In-theatre environmental conditions, food storage and production facility limitations, the location and size of deployed units must be taken into consideration in setting the unit sizes and/or weights of food items desired. Bigger packages are not always better or less expensive if repackaging is required for distribution to unit kitchens. For example, 2 kg or 5 lb bags of flour that are bale wrapped are preferable to one 25 kg or 50 lb bag of flour when being distributed to three different kitchens. The same holds true if half of the ready-to-serve food, dispensed in its original container, must be discarded at meal's end because the container size was too large for the number of diners being fed. Opened food containers and repackaging of food increase the potential for food contamination. Consequently, unit sizes and weights of packaged food items should be selected to accommodate bulk breaking without repackaging, and to meet the meal production requirements of small units, thus avoiding overproduction and leftovers.

1.3.6. Packaging and Labelling Requirements

1. Strong, durable, protective, leak-proof packaging is required to protect food items from damage and contamination during shipping and storage. Cases of individually wrapped items such as salmon steaks also have the added advantage of allowing catering staff to extract only the number of portions needed without exposing the remainder of the food in the container to possible contamination. The packaging must be able to withstand the rigors of transportation.

2. Proper labelling of products is also important. Containers must be clearly labelled as to content, grade or quality level, weight/volume, ingredients, lot number, country of origin and expiry and/or best before dates. Where appropriate, directions on storage and preparation should also be provided to assist in correct and safe preparation and service. Without such instructions, inadequate heating of items such as frozen entrees may occur resulting in an increased risk of food poisoning. Labels must also be in a language understood by the end-user.

1.3.7. Means of Transport

1. Contracts should specify the requirement for perishable food to be delivered in climate-controlled vehicles appropriate for the food being delivered. Frozen products must be delivered in vehicles that will maintain their frozen state and prevent thawing. Milk and other fresh perishables must be transported in refrigerated vehicles to preserve quality and prevent spoilage. Depending on presence of extreme climatic conditions considerations should be given to use of climate controlled transportation for non-perishable food products.

2. In deployed operations, means of transport may also include sea and air transportation and the use of temperature controlled shipping containers, in addition to refrigerated vehicles. Whether shipping container, carrier or vehicle, the means of transport must be clean and free of pests, dirt and chemicals that could contaminate the food. To avoid possible contamination from hazardous chemicals, multi-purpose containers, carriers and vehicles should not be used to transport food supplies.

1.3.8. Delivery Schedules

Contracts should specify the day, and delivery time. The holding capacity and ease of delivery to the deployed units will help determine the frequency of deliveries. Increasing the frequency of delivery can lessen the food safety risk associated with shortfalls in storage facilities. Before tendering contracts, a delivery and distribution plan needs to be established to control deliveries, manage workload and aid in distribution. Inspection of goods being received is critical to food quality, quantity and safety. Controlling delivery times is one way

to ensure there is adequate time to carry out thorough inspections. However, depending on the threat level and food defence concerns, food deliveries may have to be coordinated weekly to ensure that the pattern and frequency remain unpredictable so as not to become a target of potential terrorism. Furthermore, military escorts may be required to ensure the safe delivery of food supplies.

1.3.9. Replacement Procedures for Rejected Goods

Food Service/catering staff can experience a shortage of certain foods when foods do not pass delivery inspection and must be returned to the supplier. Where some rejected items may have minimal impact on meal service, the decision to reject other critical goods may cause serious difficulties for kitchen managers in meeting the requirements for meal choices and food quantities. Without the assurance that rejected goods will be suitably replaced in a known and acceptable length of time, there is the potential for the inspecting personnel to accept questionable goods, because they believe that something is better than nothing. To reduce the likelihood of this happening, a statement of requirement for the replacement of rejected goods must be written into the contract.

1.3.10. Security and Safety of Supply

Depending on the threat level and the host country, selection of suppliers should include assessment of the security system the supplier has in place to protect the safety of the food supply from intentional contamination. Security measures and anti-tampering measures should include installations, warehouses, vehicles, security checks of personnel and drivers, the use of reputable transportation companies and the use of shipping containers with tamper evident seals.

1.3.11. Local Procurement

The nature and location of the deployed operation will determine the amount and type of food that can be purchased locally. Local procurement is frequently used to purchase perishable products such as local fresh fruits and vegetables, bread and baked products, milk and dairy products, and some special items that are not frequently required. When considering procurement from local suppliers, trained procurement and food services personnel should consult through the designated medical authority and shall be conducted in accordance with AMedP-4.5. In this manner, it will be assured that all local procurement is done with approved sources.

1.3.12. Non-Food Catering Supplies

1. Additional non-food catering supplies are required to ensure that bulk food and meals are kept safe during preparation for distribution, distribution, food preparation, cooking and meal service. These may include packaging for bulk breaking of rations for distribution, bulk or individual meals distributed to locations outside the camp area; foil and plastic wrap to cover food containers during food preparation, cooking and storage prior to meal service; and single service napkins, cutlery, dishes, and cleaning materials. Safe distribution of food supplies and food production cannot occur without these essential supplies.

2. When contracting for non-food catering supplies, contracts should include detailed descriptions and standards, unit size, packaging, means of transportation, delivery or drop off points, delivery schedule and replacement times of the consumable supplies rejected.

1.3.13. Ordering Food Supplies

1. On deployed operations, food ordering is usually centralised and carried out by the unit or theatre level food commissary/ration management centre, which, in turn, receives and distributes the food supplies to each kitchen at the unit or in the theatre. Either a “pull” or a “push” system will be used to move food and non-food supplies from the unit or theatre food commissary/ration management centre to kitchen level. With a push system, predetermined amounts of food, based on the cycle menu and number of personnel supported by the kitchen, are delivered to the kitchen on a prearranged schedule. To halt the flow of certain goods, the kitchen manager cancels the items not required, but may not order more of a different commodity. The push system of supply makes adjustment of the food supply more difficult when addressing food safety concerns arising from limitations in storage and production facilities.

2. The alternate to the push system of supply is the pull system, where the kitchen manager determines actual food requirements and places an order with the commissary/ration management centre or, in some cases, directly with the contracted supplier. In determining food requirements, the kitchen manager considers different elements such as number to be fed, food popularity and menu preferences of the diners, stock on hand, available storage space, catering staff limitations, and restrictions in the availability of potable water. The pull system of supply allows the kitchen manager to assess the risk at hand and make modifications to the food supply order to address food safety concerns.

3. Depending on the contractual arrangements, food orders may be placed in such a manner as to enable the supplier to deliver directly to each kitchen location or to a central point in pre-assembled, unit configured loads.

1.4. RECEIPT OF FOOD SUPPLIES

1.4.1. Inspection of Food Upon Delivery

1. Ordered food items first enter the military camp, unit or kitchen storage and distribution processes at the receiving dock. Accepting safe food products and rejecting unsafe or questionable products is a critical part of the overall food safety management system of a food services/catering operation. Rejecting unacceptable products is necessary to decrease the risk of potentially severe health consequences to military personnel on deployment.

2. Proper, thorough inspections of food at the receiving dock are the first line of defence against food safety hazards. Personnel trained in receiving food supplies must carefully inspect all incoming food products to make sure they are in acceptable condition and conform to the detailed descriptions, standards and conditions of the contract.

3. To ensure that food supplies are properly received, deliveries should only be accepted in off-peak hours (not at meal times) and the receiving staff should only accept one delivery at a time. Receiving of food supplies should be done in an orderly, systematic fashion, following a series of steps. These steps are:

a. check delivery truck to ensure that the truck is suitable for the purposes intended, and that it has accurate temperature controls, for example to maintain refrigerated and frozen food at temperatures outlined in Annex B;

b. check food for signs of temperature abuse during transport such as large ice crystals, excess frost on packages, water stained boxes, and mould on food or containers; check the actual temperature of the food item using a properly calibrated thermometer;

c. check for conditions that would allow potential contamination between the food products and the non-food products where both food and non-food items are transported together; reject if food has been exposed to chemicals or other contaminating substances;

d. check to see that all food products are properly labelled, including expiry or “best before” dates and batch/production numbers; reject foods that are at or past expiration or best before date;

e. check packaging to see that it is intact. Improper packaging includes broken boxes, leaking packages, dented or swollen cans;

f. check for visual signs of pest and rodent infestation;

g. check for signs of chemical contamination such as odour of gas, lubricants and cleaning agents,

h. check intact vehicle seals as well as other anomalies that may imply deliberate contamination;

i. check the actual quality of the food item to ensure that it conforms to the detailed descriptions and standards of the contract, including packaging; for example, check frozen food for signs of improper long-term storage (freezer burn);

j. check all fresh produce for dirt, signs of damage or decay; and

k. check the quantity to ensure that it conforms to the purchase order.

4. As a rule, it is better to go without a product than accept questionable food.

5. All food items that pass receiving inspection are to be marked with the delivery date and stored immediately on a “first-in-first-out” (FIFO) basis.

1.4.2. Rejection of Food Items

1. Any food that fails to meet the product-receiving criteria (e.g. food intended for frozen storage shows evidence of having thawed in transit) should be rejected and returned to the supplier for replacement or a credit note. If not taken away immediately at the time of delivery, all rejected food items are to be identified with a label “Rejected – Do Not Use” and kept away from safe food to minimize the risks of contamination. Rejected goods are to be returned to the supplier. Receiving personnel should be encouraged to ask for a second opinion from appropriate Veterinary or Preventive Medicine personnel when in doubt about the safety of a food item.

2. A written notice of rejection should be issued for each shipment or partial shipment of food rejected. It should contain contract reference number, name of company, date of delivery, item(s) and quantities rejected and returned, and reason for their rejection. Safeguards should be taken to ensure that the same rejected goods are not delivered again at the receiving dock as replacement items or as part of a new food shipment. If the process of receiving is decentralised (done at kitchen level), the kitchen manager should immediately notify their superior and other kitchen managers of any rejections. By so doing, others are alerted to potential problems, and consistency in inspection standards can be maintained.

1.4.3. Tracking Trends in Supplier Performance

Rejection notices should be kept on file and used to follow the trends in the type and number of incidents on food quality and food safety hazards that affect a particular supplier. If a negative pattern is discovered, action should be taken to cancel the contract and locate an alternate safe source of food.

1.5. STORAGE AND DISTRIBUTION OF FOOD SUPPLIES

1. It is very important that all food be properly stored immediately upon receipt. Proper storage of food, for the right length of time, greatly helps in:

   a. reducing the presence of factors that cause food borne illness;

   b. preserving the sensory and nutritional value of food; and

   c. reducing the risk of food spoilage.

2. The three types of food storage – dry (ambient), chilled (refrigerated) and frozen will be discussed later in this section. The type of food ordered and the number of days of supply (DOS) to be held determine the amount of storage required. Adjusting the DOS to be held and the type of food ordered can lessen the impact of any shortfalls in storage.

1.5.1. First In-First Out (FIFO) Stock Rotation

1. Proper rotation of stock is key to keeping food safe. Proper rotation of food stocks ensures that the oldest items in storage are used before they go bad. Using the oldest food items in storage first helps reduce the loss of food due to spoilage and time expiration.

2. The principle behind the first-in-first-out (FIFO) system of stock rotation is a simple one – use the oldest item first. This means that the oldest items in storage (those first in) must be issued before those items that were stored later or were just received. In other words, those items first in are taken out first. FIFO reduces food waste by ensuring their use before the expiration or best-before date is reached. To make the system work, follow these rules:

   a. on each food package/box/container, write the expiration date, when the item was received and stored and/or when it was stored after preparation;

   b. shelve new supplies behind old ones, so that the old products are used first;

   c. regularly check expiration dates to ensure the older products are used first; if any products are found to be beyond their expiry date, quarantine the item, mark “Expired - Do Not Use” and take the

action necessary to ensure that items are disposed of in a safe manner. Depending on conditions expired products may be considered for shelf-life extensions; and

d. regularly check remaining stock for signs of contamination, and/or deterioration that would cause the item to be judged unacceptable; if any are found, mark “Do Not Use” and take the action necessary to ensure that items are disposed of in a safe manner.

1.5.2. Provisions for Shelf-Life Extensions

Shelf-life extensions can only be granted in consultation with Veterinary or Preventive Medicine authority.

1.5.3. Safe Disposal of Time Expired and Contaminated Food Items

Most unacceptable food products can simply be disposed of in the garbage. Special care needs to be taken with time expired and contaminated packaged goods. These have to be destroyed in such a manner that ensures they do not find their way back into the local food supply system.

1.5.4. Refrigerated Food Storage

1. Temperature control is an effective way to prevent microbial growth and product deterioration. When products are kept at appropriate refrigerated temperatures it helps to retard the growth of micro-organisms present in foods. All perishable foodstuff must be immediately stored on delivery at temperatures specified at Annex B.

2. Following are guidelines applicable to refrigerated storage:

a. monitor the temperature of the refrigeration unit and record the readings three times daily on the Temperature Record Sheet or other suitable documentation; if the right refrigeration temperatures (as per Annex B) are not maintained, seek urgent repair of the unit and move goods to other properly functioning refrigeration units;

b. place at least one hanging thermometer inside the refrigeration unit (in the front by the door) to aid in monitoring internal temperatures;

c. monitor the temperature of foods regularly. Using a calibrated thermometer, randomly take temperatures of foods stored in the

refrigeration unit. If temperature is above appropriate levels, find the cause and take corrective action;

d. store food on racks or pallets (never store food directly on the floor of the unit where it could become contaminated with liquids, dirt, etc.);

e. rotate refrigerated food supplies using the FIFO method;

f. never overload the refrigeration unit. Overloading may prevent airflow resulting in inadequate and uneven chilling of stored food;

g. never line the shelving with foil or paper as these items prevent good airflow around the food;

h. wherever possible, store raw meat, poultry and fish separate from cooked and ready-to-eat foods to prevent cross-contamination. If the same refrigeration unit must be used to store raw and cooked meats, dedicate a shelving rack to cooked meats and another to raw meat. Under extreme conditions with the approval of the designated Veterinary or Preventive Medicine authority, cooked items or ready to eat items may be stored above uncooked and to-process items when refrigerated storage space is limited;

i. wherever possible, have separate refrigeration units for meats, for fruits and vegetables and for milk and dairy products to prevent cross-contamination;

j. establish the following top-to-bottom order raw and to process in the refrigerator is recommended:

1. fish on the top shelf;
2. whole cuts of beef and pork;
3. ham, bacon and sausage;
4. ground beef and ground pork; and
5. poultry at the bottom; and

k. wrap and/or cover all foods properly. Leaving foods uncovered can allow cross-contamination. Store food in clean, covered containers and label clearly with date of production; and

l. Hazardous materials (batteries, film, etc.) and non-food products, i.e. medication, shall not be stored in the refrigerator with food.

1.5.5. Frozen Food Storage

Frozen food must be stored at temperatures that will keep it frozen solid. To maintain frozen food, temperatures must be at or below the temperature specified at Annex B. Following are guidelines applicable to frozen storage:

a. monitor the temperature of the freezer unit and record the readings three times daily on the Temperature Record Sheet. If the appropriate temperatures are not maintained, seek urgent repair of the unit and move goods to other properly functioning freezers. Use of minimum/maximum thermometers or electronic monitoring systems could decrease the requirement for frequency of manual temperature recording. In this case, temperatures shall be verified at least once a day during periods of peak activity;

b. rotate frozen food using the FIFO system;

c. check for damage to slow moving food items caused by lengthy freezing;

d. keep unit closed as much as possible; and

e. defrost freezers regularly to prevent accumulation of ice. It is preferable to move food to another freezer unit while defrosting.

1.5.6. Dry or Ambient Food Storage

1. Foods not requiring refrigeration or frozen storage must be stored in a clean, dry, well ventilated, well lit and enclosed area that is specifically designated for food storage and that provides for restricted access to authorised personnel only. Following are guidelines applicable to dry food storage:

a. keep storerooms dry, well ventilated and free from insects and rodents;

b. keep the temperature of the storeroom with the limits specified at Annex B;

c. store dry foods at least 15 cm (6 inches) off the floor on shelving units or racks away from direct sunlight and heat;

d. store foods in their original packages as much as possible. Once the packages are opened, store the product in airtight containers that are clearly labelled;

e. remove exterior wrappings such as shrink wrap from supplies before storage;

f. keep all opened foods (e.g. opened bag of flour) stored in closed container to prevent contamination or spread of food insects; and

g. store food according to the FIFO rule. Boxes and cans should all be labelled with the date of delivery.

2. Additional non-food catering items such as disposable, single use dishes, cups and utensils, paper goods, packaging may be stored in the same area as dry food products.

1.5.7. Chemical Storage

Hazardous chemicals such as cleaners, sanitisers, pest control chemicals, degreasers and other non-food chemicals can be poisonous to humans. Every effort must be made to prevent food from becoming contaminated with these items. Therefore, all bulk chemicals must be stored under proper conditions in a secured area. At a minimum, daily use quantities of chemicals need to be kept **away from** food and food contact surfaces. Chemicals should be stored:

a. in a dry, well lit, monitored area;

b. away from all food and food contact surfaces;

c. in their original packaging with instructions and material safety data sheets (MSDS) available for each chemical product; and

d. in closed, well covered, original containers after initial use to prevent contamination. If placed in different containers, the containers must be clearly marked as to their contents and kept away for food.

1.6. BULK BREAKING RATIONS AND DISTRIBUTION

1. Bulk breaking of rations is required when delivery of food is made to a central point rather than to each kitchen. The nature of the deployed operation and location of units in theatre determine the requirement for bulk breaking. Centralised feeding and the use of suppliers willing to deliver supplies in unit configured loads (packaged for each kitchen or unit food services operation) reduces the requirement for bulk breaking in-theatre and the human resources needed to perform the task.

2. When received at a central location, food supplies must be broken down and distributed to the kitchens. If not attached to the major kitchen, a suitable commissary/ration management centre with adequate space for receiving,

storage (ambient, chilled and frozen), breakdown, assembling and issuing is required. Dedicated ration vehicles are needed to ensure safe, uncontaminated delivery of food supplies to the kitchens. If the commissary/ration management centre is more than 30 minutes away for the kitchen, the dedicated ration vehicle should be temperature controlled for the safe delivery of perishable goods (frozen and refrigerated).

3. To maintain food safety during bulk breaking and distribution, the following practices should be instituted:

a. store food immediately upon receipt even if it is to be redistributed in the near future;

b. handle all foods with care so as not to contaminate them;

c. wherever possible, keep food in its original packaging to prevent contamination;

d. use clean containers with tight sealing lids or other appropriate packaging material to protect food that needs to be broken down into small amounts and repacked;

e. assemble and hold refrigerated food under refrigeration until transported;

f. assemble and hold frozen goods in freezer until transported; and

g. when a single vehicle is used to distribute a mix of supplies, segregate goods as much as possible to prevent potential cross-contamination.

1.7. ADEQUACY OF STORAGE FACILITIES

1. On deployed operations, shortfalls in food storage facilities often are the norm and must be addressed to minimize risk. Temperature plays a major role in the control of biological food hazards. Consequently, the adequacy of refrigerated and frozen storage is of greatest concern. Where shortfalls exist, every effort should be made to find additional refrigeration or alternate sources of storage to minimise or eliminate shortfalls. In addition, action should be taken to adjust menus and food orders to reduce reliance on items requiring refrigeration. Following are some measures that can be taken to compensate for shortfalls in refrigerated storage:

a. increase the frequency of delivery of refrigerated items and reduce the number of days of supply held by the kitchen;

b. eliminate or minimise the use of fresh fruits and vegetables and increase the use of canned alternatives;

c. use dry powdered milk, which only needs to be refrigerated when reconstituted, or ultra high temperature milk, which is shelf stable; and

d. increase the use of shelf stable canned meats and entrees (note: care must be taken in their selection as some products such as canned cured ham and corned beef may still need to be refrigerated.)

2. Regions of extremely high temperatures pose the added problem of safe storage of dry goods such as canned goods that deteriorate much more quickly during exposure to extremely high temperature (see Annex B). Additional temperature controlled storage will be required to preserve the food supply.

3. Regions with very cold temperatures also affect the storage of canned goods. The integrity of the packaging of some canned goods may be compromised by the expansion that takes place with freezing. The freeze-thaw cycle also can affect the quality of the product. Therefore, in cold regions with temperatures below the freezing point, dry storage facilities must be heated enough to prevent freezing.

4. To improve food security conditions, all storage areas (dry, refrigerated and frozen food storage and chemical storage) should have restricted access and only designated employees permitted in these areas.

1.8. FOOD PRODUCTION

1. The food production process includes food preparation, cooking, holding of food ready for service, service and recovery of leftovers. The production process begins with food preparation. Food preparation involves activities that transform food items received from suppliers into food ready for either:

a. assembly and cooking; or

b. assembly and service.

2. Food preparation may include such activities as cleaning, washing, chopping, cutting, and slicing of fruits and vegetables; thawing, trimming, cutting into individual portions, chopping and mincing of meat, poultry and fish; and reconstituting beverage powders. Temperature, time, exposure to contamination, availability of potable water and adequacy of kitchen equipment and facilities are some of the safety concerns associated with food production.

1.9. TEMPERATURE DANGER ZONE

1. Most micro-organisms become dormant when refrigerated at 4 °C (40 °F) or below, or frozen. They thrive and grow in warmth, and they are destroyed at temperatures above 60 °C (140 °F). Consequently, the temperature range between 4 °C (40 °F) and 60 °C (140 °F) is known as the ***temperature danger zone*** in food safety. Therefore, every effort must be made to minimize the amount of time food is exposed to this temperature danger zone (shelf stable foods excluded).

2. In addition to the right temperature conditions, micro-organisms need moisture, food, the presence or absence of air, the correct acidity and the time to grow. Minimizing the growth time throughout all phases of the processes and in particular, during food preparation is vital.

3. Temperature Abuse and Time. Exposure of food to the temperature danger zone is also known as temperature abuse. Temperature abuse is cumulative in time. As food flows through the production process, the same food may be thawed, cooked, held hot and served, or cooled and served cold. Consequently, it may pass through the temperature danger zone a number of times. Unfortunately, the food handler in one phase of the operation does not know if the product has been previously abused or for how long. Therefore, applying safe, timely handling and storage procedures throughout the production process can decrease temperature abuse and keep potentially hazardous foods safe. Exposure of potentially hazardous food to the temperature danger zone should not exceed **a maximum of 4 hours** of total accumulated time during the food preparation, holding, and service processes. Temperature sensitive food should not keep on the serving line/buffet for more than 2 hours.

4. Temperature abuse can be minimized during preparation by:

   a. removing the item to be prepared from refrigeration just before starting the task;

   b. working on one item at a time and immediately refrigerating the prepared item in clean covered containers,

   c. never leaving food unattended; and

   d. returning the food to the refrigeration unit before taking a rest break.

1.10. CROSS-CONTAMINATION

During all phases of the food production process, food may be exposed to potential contamination from many sources such as food handlers, work surfaces, equipment, other potentially hazardous raw food, insects and rodents, and blowing sand and dirt.

1.10.1. Separate Preparation Areas and Equipment

1. To reduce the potential for cross-contamination of food, setup designated food preparation areas within the kitchen. Fruits and vegetables should be prepared in a space separate from meat preparation, and separate from the preparation of baked goods. Ideally, the food should always flow forward towards the meal service area and never back to raw food preparation areas. For example, the slicing and panning of cooked meat should not take place on the same table and cutting board used to prepare a raw product. Sinks, cutting boards, pans, hand tools and specific equipment should be assigned to each area and kept separate. Colour coding of plastic cutting boards for use with raw meat, chicken, fish and vegetables may further assist in the prevention of cross-contamination. Additionally, all food production areas should be restricted to authorised kitchen personnel only and a method of identifying employees with specific access privileges should be implemented.

2. On deployed operations, kitchen space may be limited and separation of activities not possible. Under these conditions, the preparation activities for raw and cooked products should be done at different times, and the preparation area should be thoroughly cleaned and sanitised between each activity.

1.10.2. Food Handlers

1. Food handlers are a potential source of contamination. They <u>can</u> help keep food safe by:

   a. thoroughly cleaning knives, hand tools and equipment after each task;

   b. wearing clean uniforms and hats/hairnets;

   c. changing aprons and uniforms when soiled;

   d. thoroughly washing hands with soap and hot water –

      1. after each task;

      2. after using washroom facilities;

      3. after sneezing or coughing; and

4. after touching mouth or eyes;

e. using appropriate hand tools to avoid direct contact with the food;

f. wearing single use gloves when handling prepared food (discard and wash hands after preparation); and

g. properly trained on safe food handling procedures.

2. On deployed operations, many of the food handlers may be from the host nation or from a nearby developing country. Food safety may be compromised due to cultural differences, local food customs and practices, and their unfamiliarity with certain food products. Extra care must be taken to ensure that food handlers from the host nation or a developing nation receive adequate training in all aspects of the food services/catering operation and in personal hygiene requirements and practices. Furthermore, all food handlers should be medically examined by a competent medical authority to eliminate infectious disease that could be transmitted through food or non-sexual close contact with others. Further details are specified in Chapter 2 – Food Services Personnel.

1.10.3. Camouflage Paint and Military Uniforms

1. Commanders may dictate that personnel maintain combat operational readiness in extreme tactical situations, which may include the wearing of camouflage paint or other coatings. At remote feeding sites, individuals serving food or performing basic site cleanup, such as collecting trash, may wear camouflage paint or other skin coatings on the face, hands, and arms, but the hands and arms shall be covered with disposable, single-use glove

2. Military uniforms worn by cooks and military personnel assigned to kitchen duties (KPs) shall be free from heavy soil and residues from handling fuel and other petroleum products. Cooks should wear a clean uniform every day and should minimize wearing tactical gear that may present a safety issue or potentially contaminate food during preparation or service. If conditions (as determined by tactical commanders) require cooks and KPs to wear tactical gear and camouflage paint or other coatings on the hands, forearms and face, the food operations supervisor or senior leader should consider curtailing the use of fresh rations and replace with individual or unitized group rations until conditions are more conducive for management of hygienic controls.

1.10.4. Other Sources of Contamination

The proper handling and disposal of food waste and garbage materials and the maintenance of a clean work environment greatly assist in protecting the food

supply from physical and chemical contaminants. The following food safety practices will help protect against contamination from insects and rodents:

a. use plastic bags to line garbage containers and keep containers covered when not in immediate use;

b. empty garbage containers when full or at least daily and clean containers as required;

c. remove garbage to a designated garbage holding area outside and away from the kitchen; hold in covered container(s);

d. keep holding area and containers clean to discourage insects and rodents;

e. have garbage collected daily;

f. keep access doors to receiving/issuing areas closed when not in immediate use;

g. only open windows that are screened (keep screened enclosures on kitchen trailers closed);

h. store cleaning materials and equipment in a separate area away from food storage, preparation, cooking and serving areas;

i. clean up any spills immediately; and

j. sweep and wash floors after each meal.

See *Chapter 2 – Food Services Personnel* for more information about food handlers, *Chapter 3 – Cleaning and Sanitation* for additional cleaning requirements and practices and *Chapter 5 – Buildings and Structures* for information regarding buildings and structures for a food production facility.

1.11. THAWING OF FROZEN FOOD

1. Thawing frozen food is a major concern because freezing does not destroy micro-organisms. They simply become dormant. When thawed, the micro-organisms start to grow again. Consequently, frozen food shall never be thawed at room temperature. Doing so results in the exterior of the food becoming temperature abused long before the interior is thawed. The following thawing methods keep food safe for human consumption:

a. thawing under refrigeration (temperature of 4 $^{\circ}$C (40 $^{\circ}$F) or lower);

b. thawing with cold running potable water;

c. thawing as part of the cooking process; and

d. thawing in the microwave.

1.11.1. Thawing under Refrigeration

Advance planning for meal production is required to thaw products under refrigeration because it takes about 10 hours per kg (4.5 hours per lb) to defrost large solid meat items such as turkeys and beef roasts. Thaw frozen products in a refrigerator with temperature between 2 °C and 4 °C (36 °F and 40 °F). Place frozen products in special containers and/or drip pans to prevent fluids from dripping on other foods stored in the refrigerator. Thawed frozen fruits, vegetables and fruit/vegetable products should not be refrozen.

1.11.2. Thawing Using Cold Running Water

This method shall only be used for food items that will undergo immediate cooking. In such cases, packaged frozen food may be defrosted under cold running potable water (max temperature of 21 °C or 70 °F). Frozen foods must be sealed in an impermeable package in order to use this method. A large deep sink with a standpipe drain with a safe source of cold running potable water is required. Submerge the item completely in the cold running potable water and run the water with sufficient velocity to carry any loose particles into the overflow. Packaging must remain on product during the thawing process to minimize contamination of premises. This method, which takes about 2 hours per kg (1 hour per lb), is frequently used to thaw poultry. The entire time that is used to thaw food in this method must be included as time in the Temperature Danger Zone.

1.11.3. Thawing as Part of the Cooking Process

Many frozen entrees are thawed and cooked in one continuous process, following manufacturer's instructions. Additional cooking time is required using this method. This method shall only be used for food items that will undergo immediate cooking.

1.11.4. Thawing in the Microwave

The microwave oven is a good alternative for thawing small quantities of frozen food quickly. To do so, follow the microwave manufacturer's directions for actual defrosting times and intensities. This method has limited application when dealing with large quantities. This method shall only be used for food items that will undergo immediate cooking.

1.12. CLEANING AND DISINFECTING FRESH FRUITS AND VEGETABLES

1. All foods must be prepared properly to keep them safe. Once prepared, foods are either cooked or held and served cold in their raw state. Special care must be taken with all foods that are eaten raw because they have not been exposed to the benefit of cooking, which destroys most harmful micro-organisms. Fresh fruits and vegetables are the other group of foods most often eaten raw. The following steps should be followed when washing and preparing fresh fruits and vegetables:

a. discard any rotten fresh fruits and vegetables;

b. before and after handling fresh fruits and vegetables, wash your hands thoroughly with hot water and soap;

c. thoroughly wash all fresh fruits and vegetables under cold running potable water;

d. scrub fresh produce with a firm skin or surface such as potatoes, carrots, pineapple, cantaloupes, papaya, mangoes, kiwi, grapefruit and oranges and rinse under cold running potable water with a clean produce brush. If improperly washed, the edible part of the fruit or vegetable could become contaminated during peeling and/or cutting, thus posing a health risk when eaten raw;

e. remove any damaged, or bruised areas since harmful bacteria can thrive in these areas;

f. if not immediately cooked, place cleaned vegetables in clean covered containers marked with date/time of preparation, and store in a separate vegetable refrigerator or on shelves above unprepared food; and

g. clean and sanitise all counters, equipment, cutting boards, knives, and peelers after use.

2. Consuming uncooked or non-peeled fresh fruits and vegetables purchased in developing countries can be risky due to certain farming (use of human excrement and untreated manure) and harvesting practices. Soaking fruits and vegetables in chlorine or potassium permanganate solutions does not of itself make fresh produce safe for consumption in a reliable way. For example, after soaking salad greens may still harbour micro-organisms that can cause illness. Disinfected foods must still be cooked or peeled to be safe to consume. Therefore, in such conditions, do not purchase or serve risky produce from developing countries that cannot be peeled or cooked before eating.

3. Disinfecting fruits and vegetables that cannot be cooked or peeled before eating is critical in reducing the risk of contamination. To disinfect fruits and vegetables, soak in a chlorine solution (100 parts per million free chlorine) for a minimum of 60 seconds or suitable alternative as approved by the Veterinary or Preventive Medicine authority. Rinse in cold running potable water. When potable water is limited to bottled water or water trailers, rinse twice in consecutive water baths.

1.13. LIMITED POTABLE WATER

1. On deployed operations, the potential for food borne illness is increased sharply when potable water is limited to bottled water or water trailers. In food preparation, the following activities are substantially affected by the shortage of potable water:

a. cleaning and processing of fresh fruits and vegetables;

b. thawing of frozen food under cold running water;

c. production of ice;

d. cleaning and sanitising of work surfaces, tools and equipment, and

e. handwashing for food handlers.

2. To minimise the risk associated with the food production when potable water is limited, alter menus and food orders to reduce the use of most fresh fruits and vegetables. As well, use alternate thawing methods, which do not require running potable water, to defrost frozen food items. Finally, ensure that adequate quantities of clean hot water are available for hand washing and cleaning/sanitising of work surfaces, tools and equipment.

1.14. COOKING

1.14.1. Cooking Temperature

Cooking refers to the process of heating foods by various means and cooking methods. Correctly done, the cooking process will destroy most micro-organisms harmful to humans and make the food safe to eat. To kill pathogens in food, the cooking process needs to bring all parts of the food up to the required temperature for the correct length of time. Under tactical field conditions, all food must be cooked to a minimum of 72 °C/162 °F internal temperature. See Annex M for definition of tactical field conditions. For permanent kitchens as designated by the Veterinary or Preventive Medicine authority, see Annex C for internal cooking temperature of products.

1.14.2. Temperature Measuring Devices (TMDs)

Calibrated thermometers or food temperature measuring devices (TMD) will be used to verify minimum prescribed cooking temperatures are attained. Food and water TMDs must have a numerical scale with increments no greater than 1 °C (2 °F) for the intended range of use and will be calibrated to ensure accuracy within +/- 1 °C(2 °F) margin of error.

1.14.3. Frequency of Food Handling

1. The frequency of food handling increases the potential for contamination and temperature abuse. The production of some menu items requires little food handling while others require much more. Foods that are easily prepared and served hot immediately upon cooking, such as steaks cooked to order, require little handling in comparison to a cold chicken salad sandwich. In some instances, further preparation and/or assembly, as well as a holding period, follow cooking. Here are some examples of the many handlings that food may be subjected to before service:

a. cooked, held hot and served, such as most portioned meats, casseroles, stews, cooked vegetables, soups, sauces and gravies;

b. cooked, sliced, panned, held hot and served, such as roasts of meat;

c. cooked, chilled and served, such as milk puddings;

d. cooked, chilled, reheated and served; this includes food items prepared in advance, such as soups, sauces and pasta casseroles;

e. cooked, chilled, assembled, chilled, transported, reheated and served, such as chilled, individual dispersed meals that are served hot; and

f. cooked, cooled, chopped, mixed with other ingredients, assembled, chilled, packed, chilled, transported, chilled and served, such as meat or egg filling for a sandwich in a box lunch.

These examples illustrate the complexity of the process, as well as the many opportunities for temperature abuse, cross-contamination and recontamination associated with food production.

2. The following list of food safety practices for cooking food will aid in the destruction of pathogens and keep food safe as raw food is being transformed into edible hot and cold menu items for the meal:

a. cook as close to serving time as possible to reduce holding time;

b. cook only the quantity required for the meal (to have fewer leftovers and/or little waste);

c. cook in small batches to reduce holding time;

d. turn pans in oven or stir the food during cooking to ensure even heat distribution throughout the product;

e. cook large meats in one continuous process (do not stop part way through cooking as large roasts cannot be chilled quickly enough);

f. never put large pieces of meat directly in the refrigerator to chill as the food will not cool quickly enough; cut into smaller pieces or slice and place in shallow covered pans;

g. never put large containers of hot food such as soup and meat sauce directly into the refrigerator. To allow the food to chill more quickly, cool in small quantities in shallow pans of no more than 10 cm or 4 inches in deep; the level of food in the pan should be no more than 5 cm or 2 inches in depth;

h. stir hot soups and sauces to speed cooling;

i. always cover food being cooled and held;

j. never use cloths to cover food;

k. make and assemble individual meals and sandwiches in small batches and return to refrigeration unit as quickly as possible; and

l. always date/time mark chilled cooked food items and assembled box lunches.

1.14.4. Cooling Temperature and Time

1. Any food that is cooked and refrigerated before serving should be chilled as quickly as possible in order to minimize the time the product is in the temperature danger zone. For a safe cooling process, food must be cooled from 60 °C (140 °F) to 20 °C (68 °F) within 2 hours, and then from 20 °C (68 °F) to 4 °C (40 °F) or less within 2 hours. Actual measurement records of having achieved 20 °C (68 °F) within 2 hours is required to use this method. If the facility does not want to record temperatures each time, cooling to 4 °C (40 °F) must be achieved in a total of 4 hours. Active temperature controls (such as putting the food into more shallow containers to ensure rapid cooling) will

need to be employed. Again, it is important to reduce to a minimum the total cumulative time that the food is exposed to the temperature danger zone.

2. Cooling potentially hazardous food that is prepared at room temperature and that is intended for refrigerated storage before service requires that the cooling period from room temperature to 4 $^{\circ}$C (40° F) or less does not exceed 4 hours.

1.14.5. Reheating Chilled or Frozen Cooked Products

Reheating requirements for all chilled or frozen cooked products will be done in accordance with the procedures used to prepare fresh food as detailed at Annex C.

1.14.6. Adequacy of Cooking Equipment and Facilities

On deployed operations, fully equipped, well designed kitchens are not usually available at the start of an operation. Temporary facilities may lack adequate workspace, cooking and holding equipment, small hand tools, and even sufficient pots and pans. While seeking additional equipment or more spacious accommodation, shortfalls may be overcome by adjusting the menu plan and food orders to suit the space and equipment available.

1.15. PRODUCTION CONTROL

Detailed production planning by managers and the use of production control charts greatly assist kitchen managers and food services/catering staff in producing safe, nutritious and appetising meals. Proper planning enables kitchen managers to overcome or avoid potential health risks. Through good planning, kitchen managers can:

a. adjust menus to overcome unforeseen problems such as refrigeration unit breakdowns and water shortages;

b. ensure adequate time is available to thaw food under refrigeration;

c. ensure perishable foods, including those with a “best before” date, and dry and canned goods with a time-expiry date are used before they spoil or time expire;

d. minimise food leftovers due to over production; and

e. ensure the correct and timely use of approved leftovers.

1.15.1. Meal Production Control Charts

The production control chart is an effective way to capture and formalise the meal production plan and to inform all production personnel of what food to prepare, when to prepare it and how much to prepare. Properly completed, these charts give valuable information as follows:

a. itemise the food preparation and cooking to be done for the day by meal and any advanced preparation requirements;

b. control the quantity to produce by specifying what and how much is to be produced and the recipe to be used;

c. assign tasks to workers with appropriate skills and training;

d. provide instructions on the internal cooking temperatures for meal dishes;

e. help control the workflow to ensure food is prepared as close to serving time as possible;

f. provide instructions on the holding temperatures of hot and cold food prior to service;

g. provide direction on the portion size when serving the item;

h. provide direction on recovery action to be taken for approved leftover items; and

i. provide a written record of amount produced, consumed and recovered, which can help in future meal production planning and food ordering.

A sample production control chart is contained in Annex D.

1.15.2. Clean-As-You-Go

While cleaning is a separate chapter (see Chapter 3 for information on cleaning and cleaning methods), the principle of “cleaning-as-you-go” is very important in food production, especially under field conditions where workspace is at a premium. Operating under the principle of clean-as-you-go means:

a. clean up spills as they happen;

b. clean and sanitise counters, cutting boards and equipment immediately after each use;

c. place waste materials in plastic-lined garbage containers;

d. cover garbage containers immediately after each use;

e. properly cover, close packages and return to storage any remaining food supplies; and

f. make the work area ready to be safely used again.

All food services/catering staff should be trained to use the “clean-as-you-go” method.

1.15.3. Standard Operating Procedures

Food services organisations in deployed operations need to have written standard operating procedures outlining good food hygiene principles. This procedure needs to include but is not limited to: how the organisation will monitor and record temperatures, cooling procedures, corrective actions to be taken, and other requirements as detailed in this Chapter.

1.16. SERVICE

1.16.1. Dining Facility Meals

On deployed operations, meal service in dining facilities generally takes place at set times of a known duration in a central location. Food is prepared, cooked and held ready to serve and meet the flow of diners into the dining facility. When required, the cooked food may be further assembled, packed, held and delivered to external locations in bulk or as individual meals, where it is served or distributed for consumption. Food safety risks associated with meal service involve temperature abuse, time, and exposure of food to contamination. Improper holding temperature is a common cause contributing to foodborne illness.

1.16.2. Dispersed (Packed) Meals

1. It is not always possible for troops to return to the kitchen or dining facility at mealtime. When required, members may take their meal with them or have it delivered to their work location. A dispersed meal is a freshly prepared meal, that is packed, then served hot or cold, and that is consumed away from the kitchen or dining facility. These meals may be in the form of bulk or individual cold box lunches, bulk hot meals, and individual hot meal packs.

2. Special packaging and handling is required to keep these meals safe. Dispersed meals must be protected against temperature abuse as well as possible physical and chemical contamination during transportation. To protect dispersed meals against potential foodborne illness, follow the following food safety practices:

a. mark meals with the date and time of preparation and issue;

b. prepare sandwiches and cold plates in advance for use in packed cold meals and refrigerate overnight;

c. for packed cold meals held at ambient temperature, consume within 4 hours of issue from refrigerated storage; if not consumed within 4 hours, discard all perishable, potentially hazardous food items. To minimise risks in hot climate environments, it is a good practice to include frozen, individual juice boxes in the lunch box to keep the food cold for a longer time after issue from refrigerated storage. Using frozen sandwiches is also a good means to keep the food cold in the lunch box;

d. for hot meals, pack as close to issue time as possible; pre-heat the insulated food containers before filling with the hot food; and

e. for packed hot food, consume within 2 hours of issue when held in pre-heated insulated food containers; if not consumed within 2 hours, discard.

3. All time-expired meals are to be discarded in such a manner as to render them inedible to others (e.g. remove from packaging and discard with other wet garbage).

4. Individual operational ration packs are to be used when time, distance and transportation methods prohibit the safe use of hot or cold dispersed meals.

1.16.3. Hot Holding Temperature

1. Following cooking, hot prepared items must be held at or above the surface temperatures as outlined in Annex C. Batch cooking and timely replenishment of serving steam tables minimize holding time. Use a calibrated thermometer to monitor the temperature of food in hot holding.

2. Hot holding equipment such as steam tables or hot serving tables, heated food cabinets, chafing dishes, and pre-heated insulated food containers are to be used to hold hot food for service. Holding equipment must be preheated before use and must not be used to cook items.

1.16.4. Cold Holding Temperature

1 There are two groups of food that need to be kept cold during meal service. They are previously cooked foods, such as cold cuts of meat, and foods consumed without cooking such as salads and dairy products. Foods that are served cold should have an internal temperature of 4 $^{\circ}$C (40 $^{\circ}$F) or less as per Annex C.

2. When not held in refrigerated units, cold food can be kept cold during meal service by using refrigerated display counters, refrigerated milk dispensers, and pre-cooled insulated food containers. Frozen gel packs, packs of dry ice and ice made with potable water can also be used to help keep food ready to serve cold. Never put a food product directly on the ice. Use serving trays, pans or plates to hold the cold food.
Note: Dry ice (frozen carbon dioxide) is a hazardous substance that can cause skin burns (frost bite) and asphyxiation, if not handled and stored properly. When using dry ice as a coolant, personnel must be trained to handle, store and use it safely.

3. Cold food should be held on display in cold holding for a maximum of 4 hours. Serve smaller quantities of cold food at a time and replace frequently to minimise cold holding time. Use a calibrated thermometer to monitor the temperature of food in cold holding.

1.16.5. Room Temperature Holding (22-25°C or 72-77°F)

Room temperature holding for hot and cold food items is a high-risk activity that should be avoided wherever possible. When used, this method should be for foods intended for immediate consumption only. Register the time at which the food is placed at room temperature holding and discard any item has had a total preparation and holding time approaching 4 hours in the temperature danger zone. Temperature sensitive food should not keep on the serving line/buffet for more than 2 hours.

1.16.6. Protecting Food from Contamination

1. During meal service, food needs to be protected from more than just temperature abuse. A safe environment, which protects against physical, chemical and biological contamination, is also needed for the service and consumption of food.

2. Follow these food safety practices when holding and serving food:

   a. use appropriate hot and cold holding equipment to hold food at surface temperature or service as prescribed in Annex C;

   b. periodically monitor surface and core temperature throughout meal to ensure food is maintained at proper temperature;

   c. check holding equipment to ensure it is functioning properly (correct temperature);

   d. keep food covered when not being served to preserve temperature and protect against contamination;

   e. regularly stir hot liquid and semi-fluid food products to maintain an even distribution of heat throughout the product;

   f. when replenishing, never mix fresh food with “old” food;

   g. use appropriate serving utensils to serve food; and

   h. wear single use gloves when directly touching food (e.g. sandwich making, meat carving).

1.16.7. Safe Dining Environment

Meal service and meal consumption should take place in an area protected from the weather and close to the kitchen. It should be clean, well ventilated, free from pests and adequately furnished with tables and seating. Dining tables

should be clean and sanitised. Hand-wash stations should be set-up and diners encouraged to wash hands prior to the start of meal service and entry into the kitchen facility. See Chapter 5 for more information concerning buildings and structures.

1.16.8. Use of Disposable, Single-Service Utensils and Plates

When potable water is in limited supply, the health risk is increased when dishes and utensils cannot be adequately cleaned. Disposable, single-service utensils and plates should be used under these conditions.

1.16.9. Use of Insulated Containers

1. On deployed operations, there may be a shortage of proper hot and cold holding equipment. The use of insulated food containers, with inserts that are pre-heated with boiling water or cooled with ice or under refrigeration for several hours, may help overcome the lack of holding equipment such as refrigerated milk dispensers, refrigerated cold counters and hot serving tables. Insulated food containers that are hermetically closed can usually maintain safe food holding temperatures only for a limited time (maximum of 4 hours under ideal conditions with boiling water or cooled with ice). When using insulated food containers care must be taken to ensure that cold foods stay cold, and hot food stays hot. Once open, the containers only retain adequate holding temperatures for a short period. Therefore serving times must be minimised to ensure that the food is served at the required serving temperatures.

2. If the delivery of the dispersed meal service is under the control of an authorised food handler from the catering service, and who can verify the temperature of the contents, the food can be kept for service as long as temperatures continue to be monitored and do not enter the danger zone. If this control of temperature is not available, then the food must be consumed within two hours and then discarded.

1.17. LEFTOVERS

1.17.1. Recovery of leftovers

1. Leftovers are those items that have been produced for consumption, but that have not reached the consumption delivery point, the serving line. Once an item has been placed for consumption on the serving line, it cannot be retained for leftovers. Not all food leftovers are safe to recover, store and serve again, therefore use of any leftovers, regardless of origin, is highly discouraged and must be subjected to a robust risk assessment. When deciding on whether a leftover is safe to recover, consider the following:

a. the conditions under which the item was held during meal service (holding time at hot, cold or room temperature);

b. the total cumulative time that the food has been exposed to the temperature danger zone, including preparation time, holding time at room temperature, and cooling time for cold service. This total cumulative time must not exceed 4 hours. Temperature sensitive food should not keep on the serving line/buffet for more than 2 hours.

c. the exposure of the item to other possible hazards such as insects and dust;

d. whether the leftover food can be properly cooled and/or stored; and

e. whether the leftover food can be reheated to an appropriate internal temperature within 2 hours as per Annex C.

2. Potentially hazardous food leftovers must be discarded if the food:

a. was held at room temperature;

b. exposed to mishandling or excessive manipulation; and

c. held in the temperature danger zone for *any* amount of time.

3. All leftovers suitable for recovery are to be placed in covered containers, date/time marked and stored in an appropriate refrigeration unit. If not consumed within 48 hours, leftover items should be discarded. See Annex C for information on cooling and reheating temperatures and time.

1.17.2. Disposal of Discarded Food Items

Leftover foods that are judged not fit to reuse should be disposed of immediately in the garbage.

CHAPTER 2 FOOD SERVICES PERSONNEL

2.1. INTRODUCTION

Kitchen personnel, food services workers or food handlers are those persons who prepare or serve food, clean areas where food is prepared or served, deliver, store or handle rations, and clear or clean equipment involved in food preparation or service.

2.2. MEDICAL CLEARANCES

1. All military and civilian kitchen personnel will have medical clearances in accordance with their national regulations and the following paragraphs. No one shall work in a food service facility in any capacity unless cleared for the specific duty by a physician. The physician will provide a written clearance for the facility manager that the employee is fit for duty.

2. Prior to employment, Local or Third Country Nationals (LN/TCNs) will receive an examination and final clearance by a competent medical authority. The purpose of the examination is to identify infectious diseases that could be transmitted through food or non-sexual close contact with others. It will consist of a thorough relevant history and appropriate physical examination, with particular focus on symptoms of infectious gastrointestinal disease (particularly diarrhea and vomiting), infectious skin disease (such as staphylococcal skin infection or infected wounds) or infectious respiratory disease (particularly symptoms of active tuberculosis). If the previous medical history is unknown, or indicates, ancillary testing (x-ray, blood/stool analysis) is required as part of the initial physical examination.

3. A relevant examination (including questioning) of the potential LN/TCN by a knowledgeable physician provides a reasonable screening for "active Tuberculosis (TB)" and some other concerning diseases. Further, once hired, food services/catering supervisors should be alert to symptoms among their food handlers that might indicate the development of TB; concerns should be discussed with the medical authority so that follow-up action can be taken.

2.3. MEDICAL REVIEWS

1. It is recommended, every six months, personnel will have a medical interview/examination with a medical officer, or other medical personnel authorised to provide physicals for food service workers, using the questionnaire at Annex K, which will be retained by the medical organisation. At a minimum, the exam will document that the employee is not exhibiting signs of infectious diseases. On behalf of the medical officer stool samples can also be accomplished every six months and checked for common gastro-enteritis causing pathogens. Also an annually sputum test or a chest X-ray of kitchen personnel can be ordered by medical officers to certify that there is no evidence

of tuberculosis. At the discretion and expense of the employer, any employee can be required to undergo additional medical examinations.

2. All food handlers are to be medically reviewed in the following circumstances:

a. The food handler has been absent from duty for medical reasons for 24 hours or more, excluding cases of physical injury;

b. The food handler has contracted a communicable disease; or

c. Prior to returning to work after a period of exclusion for a communicable disease.

3. After an absence from work because of a communicable illness (including diarrheal disease), the employees will be referred to a medical officer for evaluation, which will include appropriate tests (e.g. stool), before resuming work. The employees will be evaluated and if found fit, provided with a written clearance signed by a physician authorizing them to return to their food service duties.

4. Prior to employment, military, contracted, and locally employed food handlers will certify that they are free of disease by completing Annex L. The military supervisor/employer maintains Annex K.

2.3.1. Employee Responsibility

All food handlers are required to report promptly any illness of an infectious nature to their supervisor. Employees must report the following conditions to management so that the need for medical examination and possible exclusion from food handling can be considered: jaundice, diarrhea, vomiting, fever, sore throat, visible infection, and discharge from ears, eyes, or nose.

2.3.2. Supervisor Responsibility

Supervisors will inspect all personnel daily at the start of the work period. Persons who exhibit signs of illness to include skin diseases, diarrheal illness (admitted or suspected), burns, boil, or cuts are to be referred to a medical personnel for evaluation. It is critically important that food handlers do not work while they are ill, especially when the cause of their illness is gastrointestinal, skin infections and respiratory in nature. Supervisors will ensure open cuts on employee hands, arms, neck and face are properly bandaged.

2.3.3. Managerial Responsibility

It will be the responsibility of the facility manager to keep a record of the medical interview/examination indicating personnel names and date of the most recent interview/examination, including dates of tuberculosis and stool testing, as per

Annex K. Units that contract for food services will make sure that these medical requirements are included in the contract.

2.3.4. Other Considerations

1. Due to food security reasons, all kitchen personnel need a background investigation prior to employment.

2. Visitors will be restricted from coming into close proximity or contact with food and food equipment, and from activities that could contaminate food.

2.4. PERSONAL HYGIENE

1. The following personal hygiene requirements apply to food services workers as well as to visitors, maintenance workers, delivery personnel, and inspectors who enter the food preparation areas.

2. Kitchen personnel must maintain a high degree of personal cleanliness and conform to good hygiene practices during all working periods in the food service facility. The body, hands and hair of food handlers must be cleaned at all times when working with food. Good hygiene habits include bathing and washing hair on a daily basis.

2.4.1. Food Handler Uniforms

1. Food handlers are to be provided with and wear clean preferably light coloured protective clothing that completely covers their ordinary clothing and prevents contamination of food. A clean uniform will be worn daily. The uniform will not be worn outside of the food service facility. A changing area will be provided with equipment to suitably store personal items (e.g., lockers or shelving units). As tactical conditions permit, uniforms should be of a light colour so that soil is readily visible. Uniforms shall be changed at least daily. Shoes should be clean and worn only in the foodservice operation.

2. Military personnel may wear their combat uniform t-shirt, but should be provided additional ones to ensure that they are able to change shirts daily, and, at a minimum, will be provided with a light-coloured coat or apron to protect clothing.

2.4.2. Hair Coverings/Hair Nets

All personnel working in food service facilities shall wear hair coverings such as nets or hats. The hair restraints must completely cover all the hair to prevent hair from falling onto food or food contact surfaces. Hair restraints will be kept clean. Clean beard nets shall also be worn.

2.4.3. Jewellery

No jewellery such as bracelets, watches, earrings, necklaces, brooches, or rings will be worn on exposed skin while preparing or handling food. The only exception is a medical alert necklace.

2.4.4. Handwashing Facilities

Hand washing facilities will be provided in the washrooms and in all food preparation areas of permanent and containerised catering facilities. These hand washing facilities will preferably be equipped with hands-free water control for hot and cold running water, liquid soap and hand sanitiser in dispensers, and single service paper towel dispensers. Each sink will have a sign instructing employees to wash and sanitise hands. In field kitchens, at least one hand washing facility with water, liquid soap and hand sanitiser in dispensers, and single service paper towel dispensers has to be available.

2.4.5. Washroom facilities

In permanent and containerised catering facilities**,** food service personnel will only use the specific washroom facilities reserved for their exclusive use.

2.4.6. Janitorial/Custodial Duties

Personnel who handle or serve food will not also clean latrines, garbage cans, sewers, drains, grease traps, or perform similar custodial duties while working on food preparation. Cooks will perform “clean as you go” procedures. Food handlers may perform custodial duties at the end of their shift.

2.4.7. Cleaning and Sanitation after Injury

If an injury occurs in the food services handling and preparation area, the immediate area of the injury must be cleaned and sanitised and any food contacted must be disposed of immediately.

2.5. EMPLOYEE GOOD HYGIENE PRACTICES

1. The following personal practices also apply to visitors and inspectors who enter the food preparation areas.

2. All food handlers must practice behaviour that will prevent food contamination. During handling, preparation, service, and cleaning of food, the following behaviours are prohibited:

   a. Eating, drinking, or chewing gum;

   b. Using tobacco;

c. Combing hair or applying cosmetics;

d. Blowing nose, sneezing, or coughing onto food and food contact surfaces; and

e. Spitting in food preparation or serving areas.

3. Food handlers are to keep their fingernails short, clean, and without nail polish. Artificial nails are not authorised.

4. Kitchen personnel will avoid touching ready to eat food with their bare hands. Ladles, lifters, tongs or scoops shall be used.

2.5.1. Handwashing

1. Food handlers must follow the following steps when hand washing and sanitising:

a. Wet hands and exposed arms (at least to the wrists) with warm running potable water;

b. Apply liquid soap and vigorously rub the surfaces at least 20 seconds;

c. Use a brush under the fingernails and on very dirty areas;

d. Rinse thoroughly with clean, warm, potable water, holding wrists downward;

e. Apply liquid soap, vigorously rub the surfaces, and rinse thoroughly again;

f. Dry hands and all washed skin with a new, clean disposable paper towel, not on apron or dishtowels;

g. Use paper towel to turn off the water tap if foot-controlled tap activation is not available; and

h. Apply disinfectant on alcoholic base, vigorously rub the surfaces at least 10 seconds and let the surfaces dry by air.

2. Kitchen personnel will thoroughly wash their hands and all exposed portions of their arms with soap followed by a disinfectant/sanitiser at the following times:

a. The beginning of duty;

b. After using toilet facilities;

c. After handling soiled and before handling clean utensils and equipment;

e. After handling raw and before handling cooked food;

f. After performing custodial duties;

g. After handling garbage or trash;

h. After using tobacco, eating, drinking, or handling money;

i. After coughing, sneezing or using an handkerchief; and

j. As often as necessary to maintain a high level of personal cleanliness.

2.5.2. Disposable gloves

1. Unless spatulas, deli tissues, tongs or other suitable utensil is being used, food employees must wear disposable gloves when handling RTE foods. When employees may wear gloves to protect food from contamination this must not be a substitute for proper hand-washing techniques. When using disposable gloves, they must be used properly and should be of a distinct colour from the food items. The gloves must be waterproof, made of disposable plastic or vinyl and must not be made of rubber, such as gloves designed for use while cleaning.

2. Open sores or cuts on hands, arms, neck and face will be covered with a clean bandage. Gloves must be worn over bandages. Weeping/oozing cuts on arms, neck and face must be covered with an impermeable bandage.

3. Proper use of disposable gloves includes:

a. changed between tasks or when leaving work area;

b. hands must be washed before putting on new gloves;

c. changed when torn or contaminated;

d. changed after touching food or non-food items that can contaminate other food;

e. changed when hands are washed; and

f. changed after a rest break, meals, or visits to the washrooms.

2.5.3. Smoking

Smoking is forbidden within all kitchens, food areas, and storerooms. Notices prohibiting smoking must be prominently displayed in all catering areas.

2.5.4. Clothing

Outdoors clothing, footwear and private property are not to be kept in permanent or containerized catering areas. A separate staff room or locker space is to be used for the storage of these items. In all kitchens, the washing

and drying of clothes in the kitchen is strictly prohibited. Employees shall change out of their working clothes when leaving the foodservice operation.

2.6. KITCHEN PERSONNEL HYGIENE TRAINING

1. The most important and useful intervention to prevent food contamination and microbiologic diseases transmitted from a food handler through food is to enhance the personal hygiene and sanitation standards and the "safe" food handling practices through training and supervision. If suitable training and supervision of LN/TCN food handlers cannot be provided the hiring of LN/TCN should be reconsidered.

2. Studies have demonstrated that the quality of food handling techniques improves for the six months following the conduct of a formalised sanitation training program. Regular inspections serve to re-emphasize the principles of safe food handling practices. Without these confirming inspections, food handling practices deteriorate to the pre-education levels after six months.

3. All food handlers will receive training in personal hygiene and sanitation practices and safe food handling techniques before assuming their food handlers duties. Following their initial training, they will receive annually, refresher training in proper sanitation techniques. LN/TCN will receive monthly refresher training on specific hygiene and sanitation practices. Training will also occur on an as-needed basis when discrepancies are noted. Training will include, as a minimum, the following:

   a. Hand-washing and personal hygiene;

   b. Proper food temperatures;

   c. Proper food handling techniques; and

   d. Techniques to avoid cross-contamination.

4. Other topics for supervisors' sanitation talks should include:

   a. Food handlers' role and responsibility in protecting food contamination and deterioration;

   b. The main properties of common foods;

   c. The main types of micro-organisms, describing their sources and explaining the ways in which they reproduce;

   d. The difference between harmful and harmless micro-organisms;

   e. The physical and chemical factors that affect the growth, activity and death of micro-organisms;

   f. The common causes of food-borne illness and the characteristics of those illnesses;

   g. The procedures and practices that will prevent and control the incidence of food-borne illness; and

h. The basic elements of Hazard Analysis Critical Control Point (HACCP) or other suitable food safety programme.

5. Educational programs, signs, and other instructional or directive material must be developed and presented in the native language of the food service personnel.

6. The facility manager must maintain up-to-date records of employees' hygiene training.

CHAPTER 3 CLEANING AND SANITATION

3.1. INTRODUCTION

1. Regardless of the scope of a deployed military or contracted catering operation, a sound cleaning and sanitation schedule is required. A food service operation must have an effective system in place to ensure adequate and appropriate cleaning of the facility and equipment to prevent dangerous contamination. The objectives of a good cleaning and sanitation program on deployed operations are to:

a. maintain the health of personnel;

b. prevent unsanitary conditions;

c. minimise the danger of food contamination;

d. prevent waste; and

e. prevent disease resulting from food poisoning.

2. Food is easily contaminated, therefore it is essential that all equipment and utensils that come into contact with food are regularly cleaned and sanitised. Prior to implementing a sound sanitation and hygiene program in any facility or catering operation, several conditions need to be addressed:

a. Service manuals. A copy of service manuals for complex equipment is required. Service manuals provide detailed direction on techniques for properly cleaning and sanitising equipment, frequency of cleaning and information on how to complete these processes safely. Furthermore, service manuals outline preventive maintenance procedures that may constitute part of the cleaning and sanitation program; and

b. Cleaning products and sanitising agents. Any hazardous substance that is used for cleaning and/or sanitising must be accompanied by a respective safety data sheet detailing how to safely utilise the product, including the appropriate safety equipment that must be worn to prevent injury.

3.2. IMPLEMENTATION OF CLEANING AND SANITATION PROGRAM

1. Cleaning processes for all food service facilities, food equipment and utensils must include cleaning (removal of food residues and debris), rinsing, and sanitisation (by heat or chemical means). An effective cleaning and sanitation program, regardless of whether it is completed manually or mechanically, must include all 3 processes. To prevent dangerous contamination of food from food surfaces, utensils and equipment, an efficient

cleaning and sanitation program must be carried out on a regular schedule using effective materials. It is recommended that the results be verified through environmental swab sampling or similar methods.

2. Food contact surfaces must be cleaned and sanitised at the beginning of the day's shift, between food tasks, and at the end of the day's operations. Non-food contact surfaces must be cleaned daily to prevent accumulation of food residues, soil and other debris. Only chemicals approved for food service may be used on food contact surfaces. This includes equipment lubricants, sanitisers, detergents and polishers. Cleaned food equipment and utensils must be stored in a manner that protects them from contamination.

3. A log of all cleaning and sanitation activities and verification must be maintained. (See Annexes I and J for sample formats.)

3.2.1. Cleaning

The aim of cleaning is to get rid of visible soil and food wastes which have adhered to utensils and equipment. The cleaning process only serves to remove food debris through mechanical action. It is not the same as sanitation. Cleaning is normally implemented using a detergent solution capable of removing grease and food particles at a temperature of not less that 45 °C (113 °F).

3.2.2. Rinsing

Following the cleaning of equipment, rinsing must be completed on food contact surfaces (tables, worktops), utensils and equipment. The rinsing step removes soap from the surface of an article that could render the sanitising solution ineffective. Whether rinsing is completed manually or mechanically, the temperature of the water should be maintained at 45 °C (113 °F) or higher.

3.2.3. Sanitizing

The aim of effective sanitation is to kill micro-organisms on utensils and equipment that have not been removed through the cleaning process. The use of a sanitising solution (i.e. chlorine bleach, iodine solution, etc) is often incorporated. All sanitising solutions used in the catering operation must have been cleared for use by the Veterinary or Preventive Medicine authority. Sanitising can be achieved through hot water sanitising criteria or alternative, plus test kit. To ensure adequate sanitation, the following must be addressed:

a. preventing cross contamination between soiled and cleaned items – separate carts and drain boards will be provided to transport and hold soiled and cleaned equipment and utensils during warewashing operations. Employees will wash their hands

before handling sanitised equipment and will not touch the portion of utensils, plates and cups that typically come into contact with a customer's mouth; and

b. cleaned and sanitised equipment and utensils will be air dried before being stored.

3.2.4. Cleaning and Sanitation Program

An effective cleaning and sanitation program has written procedures or instructions for kitchen workers on how to clean the facility, equipment and utensils. Specific written instructions and procedures for a sound cleaning and sanitation program should include the following:

a. areas of items of equipment and utensils to be cleaned;

b. the designated food handler responsible for cleaning and sanitising;

c. the procedures used;

d. the chemicals and/or cleaning products and process to be used;

e. the equipment required to do the cleaning;

f. the frequency of cleaning and sanitising;

g. records to be completed after cleaning and sanitising; and

h. inspection and monitoring of equipment and records to confirm or verify that the cleaning was completed and effective.

Important remark: Water used for cleaning, rinsing and sanitation of surfaces and equipment for all catering facilities and equipment must be potable. (see STANAG 2136 - AMedP4.9 REQUIREMENTS FOR WATER POTABILITY DURING FIELD OPERATIONS AND IN EMERGENCY SITUATIONS) .

3.2.5. Dish and Ware-washing

1. Dishwashing should primarily be accomplished by means of a dishwashing machine. Dishwashing machines shall have a capacity sufficient for the ongoing catering activities. Washing temperature should be no less than 71 °C. Rinsing water shall have a temperature of 80 °C to ensure a hot water sanitising. Surface temperature (measured on the washed utensils) must be at least 75 °C. When hot water sanitising cannot be accomplished, the dishmachine must have the ability to conduct a chemical sanitising. Dishwashing machines shall have thermometers able to show the actual processing temperature. Defective thermometers shall be replaced or repaired

immediately. The location of the dishwashing activities will be separate from food storage and food preparation activities.

2. As a minimum, dishmachines and warewashing sinks will be cleaned after each use following a meal period/shift to prevent accumulation of food and grease residues. Cleaning of dish machines will also prevent scale build up and mold/mildew growth.

3.3. MAINTAINING CLEAN FACILITIES

1. The premises of the food operation (i.e., dining room, storage areas, kitchen) will be cleaned daily to prevent accumulation of soil, food debris, grease residues, standing water and mold/mildew.

2. Only dustless methods of cleaning will be used, such as wet cleaning, vacuum cleaning, mopping or sweeping using a broom in combination with dust-arresting compounds.

3. Toilet rooms will be cleaned, sanitised, and resupplied daily. Coordination may be required with other contracted services to ensure portable or temporary toilet facilities located adjacent to the food operation and used by the employees are cleaned and sanitised at an appropriate frequency to ensure adequate supplies and prevention of odours and unsanitary conditions.

4. Ice machines will be emptied and cleaned and sanitised at least every 30 days, whenever contamination occurs or at a frequency that precludes accumulation of soil or mold.

CHAPTER 4 PEST CONTROL

4.1. INTRODUCTION

1. Commanders and Logistic personnel should be provided with general and basic guidance on pest control, focusing and intending to minimise the danger from disease vectors insects and pests during field situations.

2. Since the rodent and pest control is a generic action, following the guidance below about food safety is the best way to achieve the proper result.

3. Insect and pest control comprises chemical control (application of pesticides) as well as non-chemical methods (including sanitation, physical barriers, source reduction and pest avoidance).

4. The main steps of insect and pest control are the following:

   a. Definition of organisms and their life cycle stages;

   b. Confirmation of the presence/absence of organisms;

   c. Determination of critical points of controlling the organisms;

   d. Actions in controlling the organisms; and

   e. Apply an inspection and sampling program in regular intervals and maintain documents.

4.2. CHEMICAL CONTROL

1. All insecticides/pesticides are required to be approved for use in foodservice establishments by national standards of the participative NATO nations and their partners.

2. Insecticides/pesticides are to be secured during transportation and storage, to prevent food and human contamination, following the guidance for chemical storage.

3. Only authorised and trained personnel must use these products, having washing facilities readily available and taking the appropriate protective measures.

4. Foodstuffs are to be protected from insecticides/pesticides.

5. A pesticide specific for the pest to be controlled should be identified and selected.

4.3. NON-CHEMICAL CONTROLS

4.3.1. Sanitation

Poor sanitation and improper waste disposal under wartime conditions greatly increase the potential for disease vectors such as filth flies and rodents. Preventive medicine or pest control manager is responsible to inform commander on how to make improvements of sanitation.

4.3.2. Waste Disposal

Prevent overflow of waste receptacles in the food facility. Replace trash liners when they are two-thirds full as this allows bags to be tied off when removed from the facility. Retain lids on waste receptacles when not in use and in wash containers when soiled with food residues and debris. Police the food facility's waste accumulation sites daily to eliminate food debris, spillage, and sources of pest harbourage.

4.3.3. Physical barriers

1. Installations should have a construction, which prevents the access of birds, rodents and to a considerable extent, insects. Floors, walls, ceilings, doors and windows should be kept in good repair, free of cracks, holes, tears, or other deterioration that allows entry or harbourage of pests. Doors should be tight fitting, remain closed when not in use and/or be provided with a pest exclusion mechanism, such as tight-fitting screen doors or air curtains.

2. Windows are to be kept closed and/or appropriate insect screens are installed.

3. Doors shall normally be kept closed.

4.3.4. Source Reduction

1. Ventilation/Temperature Controls. Containers and buildings should have a temperature regulation system and a natural or mechanical ventilation system that is able to keep the climatic parameters within acceptable limits according to the respective usage. Air intakes should be designed to prevent the entrance of dust, dirt, insects, rodents and a program of cleaning and restoring the ventilation system, in regular intervals, should be applied.

2. When used, glue plate and electrical insect traps should be installed away from food production areas. Additionally, approved repellents should not be used in close proximity to food production or servery areas. Apply an inspection and sampling program in regular intervals.

CHAPTER 5 BUILDINGS AND STRUCTURES

5.1. INTRODUCTION

1. The standard of the catering facility will usually place limitations on the complexity of catering activities during deployed operations. Usually, at the beginning of an operation, catering activities take place in an austere environment, sometimes under tentage or in existing facilities that may not have been intended for foodservice operations and this impacts the ability of the food caterer, either military or civilian, to provide foodservice. As the operation matures, facilities become more static in nature and therefore should be expected to be held to the same degree of food production sanitation as would be expected in a garrison operation. Accordingly, expectations will change as to the level of maturity and permanency of the facilities. A risk assessment should be undertaken with senior commanders on the ground regarding facility requirements.

2. Risk evaluation in military field catering operations must consider the following factors:

a. location of catering facility;

b. standard of catering premises;

c. capacity and complexity of planned catering operation;

d. availability of raw material;

e. climate and cold storage capacity;

f. availability of qualified foodservice personnel; and

g. impact of military operations and movements.

3. Cooking technology and composition of menus must be adjusted in accordance with the quality of available buildings, catering equipment and raw material.

4. The availability of a safe water supply and a well-functioning sewage system must have the highest priority in the planning of deployed catering operations.

5. Adequate structural facilities should not be overlooked as they can reduce or mitigate the risk associated with several aspects of the catering functions:

a. Risks at each stage of food handling (purchasing, receiving, thawing, food preparation, cooking, hot holding, cold holding, cooling, reheating, and service);

b. Risks at the food storage stage (dry, canned, refrigerated, frozen, storage of meat, poultry, eggs, milk, fish, fats and oils, bakery products, food mixtures, and fruits and vegetables);

c. Control of contamination (employee health, cleaning and sanitising, insect and rodent control); and

d. Housekeeping and general maintenance (washrooms, storage of poisonous substances, food waste and garbage).

5.2. CATEGORIES OF CATERING FACILITIES

1. Catering facilities can be categorised depending on their mobility and capacity as well as on the type and capacity of their equipment. Catering facilities vary from large-scale permanent garrison based catering systems to small field kitchens.

2. The characteristics of a permanent kitchen are:

a. location in a building well suited for catering purposes;

b. cold and hot water supply;

c. connection to a sewage pipeline system;

d. electric power supply;

e. integrated cold storage and freezing capability ; and

f. integrated dishwashing equipment.

3. The characteristics of containerized kitchen facilities are:

a. compact design of kitchen based on container concept (for example 20 or 40 feet ISO containers);

b. rapidly deployable with complete equipment and intended for operations at the same location for a time span from weeks up to one year or more;

c. limited mobility by means of special vehicles with container handling capacity (semi-mobility);

d. main equipment connected to the necessary integrated power, water and sewage system;

e. system has integrated or attached cooling and freezing capacity;

f. system has integrated hot water supply and dishwashing capacity; and

g. assembly of several containers to increase the complexity of a catering unit without extensive construction.

4. The characteristics of a field or tactical kitchen are:

a. mobility;

b. light weight and small volume when packed;

c. ability to follow the unit's day-by-day movements;

d. no permanent connection to electric power or water and sewage;

e. menu and production based on shelf stable raw materials;

f. limited storage of produced food; and

g. tents are often used as "housing" for the field kitchen activities.

5.3. REQUIREMENTS FOR CATERING FACILITIES

The following is to be considered guidance for siting of critical camp areas under normal operating conditions. Where tactical posture prevents adherence to these guidelines, Preventive Medicine guidance shall be sought.

5.3.1. Location

Catering premises shall be located in a location where a negative influence by smoke, dust, odours and water/humidity is prevented. Foodservices production facilities should be sited preferably upwind/uphill and at least 300 feet (100 meters) from latrines (note regulation for food handler facilities at para 5.3.10), waste/fuel storage, disposal areas and all other places with critical impact, and at least 90 feet (30 m) from sleeping areas and bodies of water.

5.3.2. Buildings

Buildings and containers shall have a design, construction and craftsmanship suitable for food production premises and should not represent any threat to food safety.

5.3.3. Surrounding Area

The immediate surrounding area should be kept clean and natural vegetation should be controlled. Transport areas and service roads must have sufficient load bearing properties and provide easy access to the road system. Trafficked surfaces (such as delivery areas, loading docks, etc.) near the catering area should be tarred or paved.

5.3.4. Ground

The ground area supporting a catering facility should be firm and well drained to prevent the accumulation of water in the area. Containers should be placed on a concrete platform at least 0.20 meters above the surrounding surface.

5.3.5. Kitchen Layout

The kitchen layout design should follow the flow of food in one direction from receiving, to storage, to preparation to serving. If the establishment cannot be set-up to follow this flow of production, then separate food preparations areas should be arranged to prevent cross-contamination.

5.3.6. Tents

Tents should have a design suitable for field kitchen premises and should not represent any threat to food safety. Tents shall be waterproof and should have an outer surface capable of reducing the impact of sun heating on catering activities. Tents must be replaced when they get torn, moldy or lose their waterproof nature.

5.3.7. Lighting

Light intensity in working areas should exceed 220 Lux on working surfaces. Light bulbs must be shielded or shatterproof to protect food and food contact surfaces from broken glass. Lighting must be designed to prevent accumulation of dirt and should be easily cleaned.

5.3.8. Ventilation

Catering facilities should have thermal insulation and a temperature regulation system (air conditioning) that is able to keep the interior environment within acceptable limits for the safe preparation of food. Air intakes should be designed to prevent the entrance of dust, dirt, insects, rodents or any other contaminating material and located to prevent direct air access across or on food preparation surfaces or food. Local exhaust or other suitable exhaust ventilation shall be provided to keep rooms free of excessive heat, steam, condensation, vapours, obnoxious odours, smoke and fumes. Ventilation shall prevent grease or condensation from collecting on walls and ceilings.

5.3.9. Pests

Installations should have a construction, which prevents the access of birds, rodents and to a considerable extent, insects.

5.3.10. Washroom Facilities

1. Non-food handler washroom facilities. The need for toilets varies according to the size and capacity of the catering facility, the production volume, number of dining guests, gender distribution as well as operational and environmental factors, but as a guide one toilet per 50 dining guests should be used, separated by gender.

2. Food handler washroom facilities. Food handlers shall be given dedicated toilet facilities, not to be used by diners and separate from the food production area to avoid cross-contamination. For food handlers, toilet facilities should be 100 meters from the foodservice production area to ensure ease of access. However, if latrines need to be closer ideal separation distance to prevent cross-contamination should be determined in consultation with Preventive Medicine personnel.

3. Handwashing and hand-sanitizing stations shall be available for both food handlers and non-food handler personnel. Equipment and procedures for cleaning and disinfection of toilets shall be in place.

5.3.11. Floors

Floors shall be load resistant, non-flaking, non-peeling and have a non-skid surface that is water resistant and easy to clean. Floors shall slope towards gullies to allow for adequate draining and to avoid the pooling of liquids.

5.3.12. Walls

Walls shall be light in colour and have a smooth surface, which is water resistant and easy to clean according to the needs of the actual catering activity.

5.3.13. Ceilings

Ceilings shall be light in colour and have a construction that prevents accumulation of dust. The ceiling surface shall be smooth and allow cleaning according to the needs of the actual catering activity. Wall and ceiling joints should be tight and sealed to prevent insect infestation.

5.3.14. Windows

Windows shall be constructed to prevent condensation. Windows are to be kept closed unless appropriate insect screens are installed. Windowsills and frames

should be smooth and easy to clean according to the needs of the actual catering activity.

5.3.15. Doors

Doors shall normally be kept closed. Doors and frames shall be impact resistant and have a smooth surface that is easy to clean.

5.3.16. Thermal Insulation

Catering containers and buildings should have appropriate thermal insulation to reduce the influence of the environment. Catering containers and buildings should have a temperature regulation system and a natural or mechanical ventilation system that is able to keep the climatic parameters within acceptable limits for the safe preparation of foods. Mechanical ventilation systems must be cleaned to prevent contamination and potential fire hazards. Filters should be cleaned or replaced at regular intervals in accordance with the manufacturer's specifications.

5.3.17. Equipment and Outfitting

Outfitting and equipment should be designed to suit military catering purposes. Equipment should be easy to clean and should not liberate any compounds that could be harmful to food products. Equipment shall be maintained according to the manufacturer's directions.

5.3.18. Thermometers

Food temperature measuring devices (TMD) will be provided and readily accessible for use to verify attainment and measurement of food temperatures. Food and water TMDs must have a numerical scale with increments no greater than 1 °C (2 °F) for the intended range of use and will be calibrated to ensure accuracy within +/- 1 °C (2 °F) margin of error.

5.3.19. Potable Water Supply

A sufficient supply of potable water shall be established. The potable water source must be separate from and installed in such a manner to prevent cross-connection with or contamination from sewage, non-potable water or liquid waste lines. The potable water that is supplied should provide adequate capacity to supply the entire food operation (i.e, handwashing, warewashing and cooking) during peak demand periods.

5.3.20. Plumbing

If plumbing lines are installed, they shall be installed to eliminate backflow, back-siphoning and cross contamination. Plumbing lines should be properly maintained (no drips or leaks) with back flow devices installed. Plumbing lines shall not be installed above food preparation areas or food storage areas. Sewage, liquid waste and used grease shall be disposed using an approved sewage (plumbed) system or other approved methods.

5.3.21. Handwashing Stations in the Production Area

Hand washing stations shall be available in sufficient numbers at a convenient and central location in the production area. Hand washing facilities shall be fully equipped with hot water, single-use liquid soap dispensers, paper towels as well as garbage bins for used paper towels. In buildings and containers, water taps should be constructed to operate via the use of a foot pedal or sensor to prevent the actual manual manipulation of taps. Sinks are to be dedicated for hand washing only and not used for any other purposes.

5.3.22. Hand Sanitizers

Hand sanitizers shall be available in working areas where the staffs' hands touch unprepared foods.

5.3.23. Hand washing for Guests

In addition to hand washing equipment in the toilet area, there should be an easily accessible hand washing station at the entrance of any dining hall. This type of facility should have the capacity to be appropriate for the expected number of guests for each meal, and should be equipped with warm water, liquid soap, paper towels and garbage bins

5.3.24. Dishwashing Equipment

1. Dishwashing should primarily be accomplished by means of a dishwashing machine. Dishwashing machines shall have a capacity sufficient for the ongoing catering activities and shall be capable of achieving the temperatures designated in Chapter 3, Section 3.2.5. When hot water sanitizing cannot be accomplished, the dishmachine must have the ability to conduct a chemical sanitising. Dishwashing machines shall have thermometers able to show the actual processing temperature. Defective thermometers shall be replaced or repaired immediately. The location of the dishwashing activities will be separate from food storage and food preparation activities.

2. If dishwashing machine is not available, the minimum acceptable equipment for manual dishwashing is a three compartment sink. Chapter 3 details the procedure for manual dishwashing.

5.3.25. Refrigerators, Freezers and Cold Storage

1. Sufficient refrigerated and frozen storage facilities shall be available to ensure safe preservation of the actual quantities and categories of food products. Storage of perishable foods requires cold storage capacity of sufficient volume. Accurate thermometers shall be installed and placed in the warmest area within the refrigerated storage unit. Refrigerators and cold storage should be operated according to the manufacturer's instructions.

2. The availability of adequate refrigerated storage will influence the selection of raw materials for production. When there are insufficient refrigerated storage facilities available, dried or canned foods will be the only acceptable raw materials for consumption. Prepared dishes shall not be stored unless they can be safely stored without supporting the growth of infectious and/or toxigenic microorganisms.

5.3.26. Dry Storage Areas

The catering facilities shall include adequate storage area for staples and bread. These areas shall be dry, cool, well ventilated, with temperatures respecting the limits set at Annex B to Chapter 1. The humidity shall be kept between 50 to 55 percent. There shall be storage areas for cleaning materials and laundry that are separated from food and food contact surfaces. These areas shall be dry, well lit, and equipped with well-ventilated storage shelves. Separate area for sorting and storing soiled laundry shall be available.

5.3.27. Waste Disposal

Food waste and refuse shall not be allowed to accumulate in facilities. All waste should be removed from the kitchen as needed throughout the day to avoid contact with fresh food and clean sections of the facility. Waste has to be stored well apart from the kitchen building due to the possible attraction of pests. Waste containers shall be kept covered and stored in containers that can be kept securely closed. Containers must be made from non-absorptive material, be leak-proof, easy to clean and to disinfect. Waste containers must be designed to minimise both the attraction of pests and the potential for airborne contamination.

5.3.28. Ice Machines

When provided, ice machines shall be installed in a clean and sanitary area that allows adequate space for safe handling of ice and does not present a risk for ice contamination. Ice machines shall be supplied using potable water. Scoops must be of smooth impervious material designed for easy cleaning. They shall be kept clean and stored and handled in a sanitary manner. Scoops

shall be stored handle up in a free draining metal bracket outside the ice storage compartment

5.4. FOOD DEFENCE

1. Reasonable measures shall be taken to secure water supply, food storage, food transportation and kitchen facilities. The risk of sabotage and ill-natured activities must be reduced and mitigated. Admittance to catering facilities and storage areas shall be restricted. Facilities shall be locked and kept under surveillance when necessary. Storage areas (dry, refrigerators and freezers) must be locked at all times unless physical surveillance by the staff is possible. When not in use (e.g. outside the periods of arrival of personnel and diners) or if not in the visual vicinity of the staff, external doors to the catering facilities must be kept locked to prevent entrance of unwarranted visitors.

4. Food Defence Risk Assessment. For NATO food supply and food service operations, a Food Defence Risk Assessment must be completed prior to commencing operations using the questionnaire found at Annex M for their feeding operation. If food services operations are contracted out, the contractor must conduct the same Food Defence Risk Assessment. This assessment will help determine the Food Defence Plan that must be put in place. The Food Defence Risk Assessment should be completed in consultation with security elements and should be revaluated at least once per year (or more frequently when required).

3. Food Defence Plan. Each NATO food supply and food service operations must have a written Food Defence Plan based on the Food Defence Risk Assessment. If food services operations are contracted out, the contractor must also have a completed Food Defence Plan available for auditors at all times. A Food Defence Plan Builder can be found at the follow link: http://www.accessdata.fda.gov/scripts/fdplanbuilder/download.cfm
Before downloading the Builder, ensure your Information Technology/Information Systems representative approves the downloading the program on you work computer system. The Food Defence Plan must be completed in consultation with security elements. Security elements must designate the plan with the appropriate security designation.

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ANNEX A PATHOGENIC MICRO-ORGANISMS

ANNEX A – PATHOGENIC MICRO-ORGANISMS			
PATHOGEN	***Salmonella enterica.* spp.**	***Shigella* spp.**	***Campylobacter* spp.**
DISEASE	Salmonellosis	Shigellosis	Campylobacteriosis
INCUBATION PERIOD	6 to 72 hours	12 to 36 hours	2 to 5 days
DURATION OF ILLNESS	1-2 days (may last longer)	3 to 14 days	7 to 10 days (relapses common)
SYMPTOMS	Abdominal pain, nausea, vomiting, fever, diarrhea	Diarrhea (sometimes bloody), abdominal pain, fever, vomiting, chills, lassitude, dehydration	Diarrhea (watery or bloody), fever, nausea, abdominal pain, headache, muscle pain
SOURCE	Domestic and wild animals, humans (intestinal tract) – especially as carriers	Humans (intestinal tract), flies	Domestic and wild animals (intestinal tract)
FOODS INVOLVED	Poultry and poultry salads, meat and meat products, fish, shrimp, sliced melons, sliced tomatoes, milk, shell eggs, egg custards and sauces, and other protein foods	Salads (potato, tuna, shrimp, chicken, macaroni), lettuce, raw vegetables, milk, and dairy products, poultry, moist and mixed foods	Unpasteurized milk and dairy products, poultry, pork, beef, lamb, non-chlorinated water
PREVENTION	Avoid cross-contamination, refrigerate food, thoroughly cook poultry to at least 85° C (185° F), rapidly cool cooked meats and meat products, avoid contamination from food handlers by practicing good personal hygiene	Avoid cross-contamination, avoid fecal contamination from food handlers by practicing good personal hygiene, use sanitary food and water sources, control flies and rapidly cool foods	Thoroughly cook food to minimum safe internal temperatures, avoid cross-contamination. See Annex C for internal cooking temperatures

PATHOGEN	***Escherichia coli O26-O103-O111-O145-O157***	***Listeria monocytogenes***	***Yersinia enterocolitica***
DISEASE	EHEC infection	Listeriosis	Yersinosis, terminal ileitis
INCUBATION PERIOD	2 to 9 days	2 to 30 days	3 to 5 days
DURATION OF ILLNESS	8 days	Indefinite, depends on treatment; high fatality rate in immuno-compromised individuals	Weeks
SYMPTOMS	Diarrhea (watery, could become bloody), severe abdominal cramps and pain, vomiting, occasional low-grade fever	Nausea, vomiting, diarrhea, headache, persistent fever, chills, backache, meningitis, abortion.	Abdominal pain (terminal ileitis), nausea, vomiting, moderate fever, mild diarrhea and increased risk for reactive arthritis
SOURCE	Animals, particularly cattle, humans (intestinal tract)	Soil, water, mud, humans, domestic and wild animals, fowl, damp environments	Swine
FOODS INVOLVED	Raw or undercooked ground beef, imported cheeses, unpasteurized milk, roast beef, dry salami, apple cider, commercial mayonnaise	Unpasteurized milk and cheese, ice cream, raw vegetables, poultry and meats, seafood, and prepared, chilled, ready-to-eat foods	Pork meat and feces contaminated drinking water.
PREVENTION	Thoroughly cook ground meat to at least 74°C (165° F), avoid cross-contamination from food handlers by practicing good personal hygiene	Use only pasteurized milk and dairy products, cook foods to proper internal temperatures; avoid cross-contamination, clean and sanitize surfaces; avoid pooling water	Thoroughly cook pork meat to at least 74°C (165°F) avoid cross contamination of other food while handling raw meat from swine.

PATHOGEN	***Vibrio parahemolyticus***	***Vibrio cholerae***	***Clostridium perfringens***
DISEASE	*Vibrio parahemolyticus* gastroententeritis	Cholera	*Clostridium perfringens* gastroenteritis
INCUBATION PERIOD	8 to 24 hours	2 to 5 days	8 to 24 hours
DURATION OF ILLNESS	3 to 5 days	4 to 6 days	48 hours (may last 1 – 2 weeks)
SYMPTOMS	Abdominal pain nausea, vomiting, headache mild fever, mild self-limiting diarrhea	Abdominal pain, acute diarrhea, severe dehydration and symptoms caused by dehydration. Without treatment a mortality of 60%.	Abdominal pain, diarrhea, dehydration
SOURCE	Seafood, crustaceans and filter-feeders	Humans (intestinal tract),	Humans (intestinal tract), animals, soil
FOODS INVOLVED	Raw and insufficient heated seafood or cross-contamination from these products.	Feces contaminated drinking water, contamination by foodhandlers and seafood (crustaceans, filter-feeders)	Cooked meat, meat products, poultry, gravy, beans that have been cooled slowly
PREVENTION	Sufficient heat treatment of seafood or avoid cross-contamination	Avoid fecal contamination, health surveillance of food handlers, practicing good personal hygiene, thoroughly cook foods to a minimum safe internal temperature, use chlorinated water	Use careful time and temperature control in cooling, hold hot foods at 60°C (140°F) and reheating cooked meat, poultry and bean dishes and products to 74°C (165°F) for at least 15 seconds within two hours

PATHOGEN	***Clostridium botulinum***	***Bacillus cereus***	***Staphylococcus aureus***
DISEASE	Botulism intoxication	*Bacillus cereus* gastroenteritis/ intoxication (emetic)	*Staphylococcus* intoxication
INCUBATION PERIOD	18 to 36 hours (may vary from 4 hours to 8 days)	½ to 6 hours (emetic type); 6 to 15 hours (diarrheal type)	½ to 6 hours
DURATION OF ILLNESS	Several days – a year	Less than 24 hours (emetic); 24 hour (diarrheal)	2 to 3 days
SYMPTOMS	Lassitude, weakness, vertigo, double vision, difficulty speaking and swallowing, constipation	Nausea and vomiting, occasional abdominal cramps and/or diarrhea, abdominal cramps, pain, nausea (diarrheal)	Nausea, vomiting, abdominal cramps, in more severe cases, headache, muscle cramping, changes in blood pressure and pulse rate
SOURCE	Soil, water	Soil and dust	Humans (skin, hair, nose, throat, infected sores), animals
FOODS INVOLVED	Improperly processed canned low acid foods, garlic-in-oil products, grilled sautéed onions in butter sauce, leftover baked potatoes, stews, meat/poultry loaves	Rice products, starchy foods (potato, pasta, and cheese products), sauces, puddings, soups, casseroles, pastries, salads (emetic); meats, milk, vegetables, fish (diarrheal)	Ham and other meats, poultry, warmed-over foods, egg products, milk and dairy products, custards, potato salads, cream-filled pastries, and other protein products
PREVENTION	Do not use home-canned products, use careful time and temperature control for sours vide items and all large bulky foods, purchase garlic and oil mixtures in small quantities for immediate use and keep refrigerated, cook sautéed onions on request, rapidly cool leftovers	Use careful time and temperature control and quick-chilling methods to cool foods, hold hot foods at 60 °C (140 °F) or higher; reheat leftovers to 74 °C (165 °F) for at least 15 seconds within two hours	Avoid cross-contamination from bare hands, practice good personal hygiene, exclude food handlers with skin infections from food preparation, properly refrigerate food, rapidly cool prepared food

PATHOGEN	***Norwalk and Norwalk-like viral agents***	***Hepatitis A/E virus***	***Puumala/ Hanta virus***
DISEASE	Norwalk Virus Gastroenteritis	Viral hepatitis	Hemorrhagic fever with renal syndrome
INCUBATION PERIOD	24 to 48 hours	2 to 6 weeks	2 to 4 weeks
DURATION OF ILLNESS	24 to 60 hours	Weeks- months	Weeks- months
SYMPTOMS	Nausea, vomiting, diarrhea, abdominal pain, headache, low grade fever	Nausea, vomiting, abdominal pain, headache, low fever, icterus.	Nausea, vomiting, diarrhea, headache, persistent fever, chills and renal failure.
SOURCE	Humans (intestinal tract)	Humans (intestinal tract)	Rodents
FOODS INVOLVED	Raw shellfish, raw vegetables, salads, water contaminated from human feces	Indirect fecal oral route or raw food, water contaminated from human feces	Food, water contaminated with excretes from rodents
PREVENTION	Obtain shellfish from approved, certified sources, avoid fecal contamination from food handlers by practicing good personal hygiene, thoroughly cook foods to a minimum safe internal temperature, use chlorinated water	Avoid fecal contamination, health surveillance of food handlers, practicing good personal hygiene, thoroughly cook foods to a minimum safe internal temperature, use chlorinated water	Pest control, sufficient field hygiene, use chlorinated water

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ANNEX B STORAGE GUIDELINES FOR DIFFERENT FOODS

ANNEX B – STORAGE GUIDELINES FOR DIFFERENT FOODS	
Product	**Acceptable Criteria** **(all temperatures quoted are internal product temperatures)**
Potentially hazardous raw foods (uncooked foods)	• Generally, store in refrigerated conditions, 4 °C (40 °F), on a shelf below cooked and prepared foods.
Canned and other hermetically sealed foods	• Rotate and observe stock. • Discard blown or swollen cans. • Discard cans without labels. • Notify suppliers/manufacturers immediately of any abnormalities in canned goods. Note: some products in cans or glass containers require refrigeration, i.e. cured hams, corned beef and salted herring. Read the label for storage instructions.
Canned meats and canned meat products	• Generally, store at temperatures preferably between 10 °C and 21 °C (50 ° F and 70 °F), but do not exceed 27 °C (80 °F) or store below freezing point. • In the case of pasteurised products, keep at 4 °C (40 °F) or lower – refrigerator. • Once the can has been opened, the unused contents must be refrigerated.
Fresh meat, smoked or cured meat	• Store under sanitary refrigerated conditions at 4 °C (40 ° F) or lower. • Once vacuum pack has been opened, refrigerate ground meat at 2 °C (36 °F) or lower for an optimal shelf life. Use within 72 hours.
Processed meat products with added preservatives	• Keep under refrigeration at 4 °C (40 °F) or lower.
Reconstituted dried meat products.	• Keep under refrigeration at 4 °C (40 °F) or lower. • Use within 24 hours.
Cooked meat	• Keep under refrigeration at 4 °C (40 °F) or lower for no more than 72 hours. • When chilling cooked meat, use covered shallow pans of no more than 10 cm or 4 inches in depth. • Keep cooked ground meat at 2 °C (36 °F) or lower. This will assist in achieving the optimal shelf life.
Entrees containing meat and meat products	• Entrees made on premises and quick-frozen must be kept frozen solid until used. Frozen entrees must be kept in a frozen solid state and not be refrozen after defrosting.
Frozen meat and frozen meat products	• Keep in frozen solid state at -18 °C (0 °F) or lower until required for use. • Defrost in a refrigerator at 4 °C (40 °F) or lower. .
Vacuum packaged meats	Refrigerated: • Keep refrigerated at 4 °C (40 °F) or lower • Keep ground meat at 2 °C (36 °F) or lower in an unopened vacuum pack for the optimal shelf life. • If a vacuum bag of an unfrozen meat product becomes broken, the product must be used within 72 hours. Frozen: • Hold in frozen solid state at -18 °C (0 °F) or lower until required for use. • Never refreeze vacuum packaged meats or meat preparations under any circumstances. • Any vacuum-packed meat product that has been thawed at room temperature must be discarded as unfit for consumption. • Hold frozen products for no longer than two months, with the exception of frozen beef roasts and beefsteaks, which can be held for

ANNEX B – STORAGE GUIDELINES FOR DIFFERENT FOODS	
Product	**Acceptable Criteria** **(all temperatures quoted are internal product temperatures)**
	six months. If the temperature is -18 °C (0 °F) or colder, then the storage time can be double that recommended. • If a vacuum bag of a frozen meat product becomes broken, the product must be used within 72 hours.
Fresh and smoked poultry products	• Keep under refrigeration at 4 °C (40 °F) or lower for no longer than 72 hours before use. • Because of the Salmonella hazard associated with poultry and poultry products, precautions must be observed during storage to prevent any spread of this bacterial infection from raw to cooked products, or to other foods.
Frozen poultry	• Keep solid frozen at -18 °C (0 °F) or colder. • Thawed in a refrigerator at 4 °C (40 °F) or lower or under cold running potable water.
Fresh and frozen eggs and egg products	Refrigerated: • Keep stored at 4 °C (40 °F) or lower and use within one week of receipt. • Store egg products such as dried eggs and dried egg products, and commercially prepared, pasteurised melange at temperatures preferably 4 °C (40 °F) or lower and use within seven days of opening. • Do not transfer egg products from their original containers. Use them within seven days after opening. Frozen: • Keep in their original identified containers until used. • Keep frozen solid until use at –18 °C (0 °F) or lower. • Defrost at 4 °C (40 °F) or lower, and do not refreeze. • Keep whites at 4 °C (40 °F) or lower and use within five days. • Keep thawed yolks and mixtures at 4 °C (40 °F) or lower and use within three days.
Fresh and frozen fluid milk and fluid milk products	Refrigerated: • Keep under refrigeration at 4 °C (40 °F) or lower. • Make sure containers are date coded and the food handler understands the coding. Frozen: • Frozen milk products subjected to temperatures of above 0 °C (32 °F) should be examined, and thawed products should be discarded.
Cheeses	• Keep wrapped or covered at all times. • Keep under refrigeration at 4 °C (40 °F) or lower.
Ice cream and frozen desserts	• Keep at -12 °C (10 °F) or lower until served. • Keep wrapped or covered in containers.
UHT foods (ultra high temperature pasteurization)	These products when intact and unopened may be stored at room temperature.
Fish and fish products	Refrigerated: • Keep fresh and smoked fish at 2 °C (36 °F) or lower. • Keep cooked fish awaiting use at 4 °C (40 °F) or lower for no more than 72 hours. Frozen: • Keep frozen fish in frozen solid state until use, at -18 °C (0 °F) or lower. • Defrost at 4 °C (40 °F) or lower. • Use thawed fish immediately and do not refreeze.
Canned fish and fish products	• Keep at temperatures not above 21 °C (70 °F). • Use content of can upon opening, or else refrigerate and use within 24 hours.

ANNEX B – STORAGE GUIDELINES FOR DIFFERENT FOODS	
Product	**Acceptable Criteria (all temperatures quoted are internal product temperatures)**
Lobster	Fresh: • Maintain in live conditions until used. • Keep at 4 °C (40 °F) or lower. Frozen: • Frozen cooked lobsters must be kept frozen solid, at –18 °C (0 °F) for the length of time specified by the supplier.
Mollusks and shellfish	• Keep alive until used if sold in the shell. • Keep at 4 °C (40 °F) or lower.
Fats and oils	• Keep in original containers, or in suitable approved bulk storage. • Keep at temperatures recommended for the particular product and its use. • Fats used for frying – keep clean and free from food particles. • Rendered fats prepared on the premises – chill rapidly and hold under refrigeration at 4 °C (40 °F) or lower in clean covered containers. • Discard rancid fats. • Store non-edible oils used for heating, lubricating, etc, in well-marked containers in well-designated areas away from food preparation.
Refrigerated bakery products Prepared food mixtures such as combinations of prepared foods with dressings, mayonnaise, milk based sauces and gravies.	• Refrigerate fillings and puddings at 4 °C (40 °F) or lower in shallow pans immediately after cooking or preparation, and hold refrigerated until combined into pastries or served. • Completed custards or cream-filled bakery products and those with edible oil simulated fillers continuously refrigerated at 4 °C (40 °F) or lower, unless served immediately. Do not store longer than 48 hours. • If products contain poultry, eggs, meat, fish or other potentially hazard foods, hold at 4 °C (40 °F) or lower for no more than 36 hours. • If prepared to be served cold, chill rapidly in 2 hours or less to an internal temperature of 4 °C (40 °F) or lower and hold at this temperature until use. Use within 36 hours. Do not refreeze.
Fruits and vegetables	• Separate fruits and vegetable handling and storage from other food handling area. • Due to the higher possibility of insects, include in storage cleaning program: - weekly emptying and cleaning of the area, - monitoring of insects and vermin, - disposal of bags and other container when empty. • Do not reuse empty bags and containers. • Do not store fruits and vegetables in plastic bags unless they are adequately ventilated. • Potatoes – it is recommended that long term storage be at 4 °C (40 °F) or lower and not exposed to light. • Canned fruits and vegetables or juices – keep at temperatures preferably between 10 °C and 21 °C (50 °F and 70 °F), but do not exceed 27 °C (80 °F) or store below freezing point. Once opened, keep refrigerated at 4 °C (40 °F) or lower, use within 72 hours. • Cooked fruit and vegetables or products - if not used at once keep at a temperature of 4 °C (40 °F) or lower for up to 48 hours. • Frozen fruits, vegetables, juices and products – keep frozen at -18 °C (0 °F) or lower until used. If defrosting, do it under refrigeration at 4 °C (40 °F) or lower. Do not refreeze thawed products. Hold thawed products under refrigeration and use within 48 hours.
Refrigerated Ready-to-Eat	• Mark with the date of preparation or the "consume by" date.

ANNEX B – STORAGE GUIDELINES FOR DIFFERENT FOODS	
Product	**Acceptable Criteria** **(all temperatures quoted are internal product temperatures)**
Dry Goods requiring Ambient Storage, ie. Canned goods	• Keep the temperature of the storeroom between 10 °C and 21 °C (36 °F and 80 °F). Avoid excessively high temperatures (above 38 °C or 100 °F) or low temperatures (below 0 °C or 32 °F). • Consider using temperature controlled containers for storage of canned goods when the storage area temperatures exceed 27 °C (80 °F) or reaches the freezing point.

ANNEX C INTERNAL COOKING TEMPERATURES FOR MEAL-DISHES

The following table shows the internal cooking temperatures to be reached when cooking meat products.

These temperatures are for use in non-tactical food production facilities only (please see Glossary at Annex M for a definition of a tactical kitchen). *For tactical kitchens, all foods will be cooked to an internal temperature of 72 °C (162 °F).*

ANNEX C- INTERNAL COOKING TEMPERATURES FOR MEAL-DISHES	
FOOD	**TEMPERATURE**
Beef, lamb and veal steaks and roasts	60 °C (140 °F) rare 71 °C (160 °F) medium 77 °C (170 °F) well done
Pork chops, ribs, roasts, fresh cured ham	71 °C (160 °F)
Ground beef, pork, veal and lamb	71 °C (160 °F)
Stuffing – cooked alone	72°C (162 °F)
Casseroles	72°C (162 °F)
Hot dogs	72°C (162 °F)
Leftovers (reheated)	72°C (162 °F)
Chicken and turkey breasts Chicken and turkey legs, thighs and wings	72°C (162 °F)
Turkey and chicken (whole bird – unstuffed),	72°C (162 °F)
Ground chicken and turkey	72°C (162 °F)
Fish	70 °C (158 °F)
Eggs – Customers requesting a runny yolk must be informed that pathogens are not destroyed until the yoke has been completely cooked.	63 °C (145 °F)
Egg casseroles, sauces, custards All other dishes	71 °C (160 °F) 72°C (162 °F)

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ANNEX D MEAL PRODUCTION CONTROL CHART

Date: _____ **Weather:** _____

Meal: _____

Forecasted Meal Count: _____

MEAL PRODUCTION CONTROL CHART

Shift Supervisor: _____

Actual Meal Count: _____

PRODUCTION						SERVICE				
Menu product	**Prepared by**	**Recipe to use**	**Amount/ Vol to prep**	**Portion/ serving size**	**Instructions (including internal cooking T°, hot and cold holding T°)**	**Run-out Time**	**Quantity Remaining**	**# portions left over**	**# of portions served and % menu mix**	**Disposition of Leftovers**
HOT DISH										
COLD DISH										
DESSERT										

Date: _____ **Weather:** _____

Meal: _____

Forecasted Meal Count: _____

MEAL PRODUCTION CONTROL CHART

Shift Supervisor: _____ **Actual Meal Count:** _____

PRODUCTION						SERVICE				
Menu product	**Prepared by**	**Recipe to use**	**Amount/ Vol to prep**	**Portion/ serving size**	**Instructions (including internal cooking T°, hot and cold holding T°)**	**Run-out Time**	**Quantity Remaining**	**# portions left over**	**# of portions served and % menu mix**	**Disposition of Leftovers**
BEVERAGE										
OTHER										

Pre-preparation for (date): _____

Staff	Product	Qty	Instructions	Staff	Product	Qty	Instructions

Date: _____ **Weather:** _____

Meal: _____ **Forecasted Meal Count:** _____

MEAL PRODUCTION CONTROL CHART

Shift Supervisor: _____ **Actual Meal Count:** _____

PRODUCTION						SERVICE				
Menu product	**Prepared by**	**Recipe to use**	**Amount/ Vol to prep**	**Portion/ serving size**	**Instructions (including internal cooking T°, hot and cold holding T°)**	**Run-out Time**	**Quantity Remaining**	**# portions left over**	**# of portions served and % menu mix**	**Disposition of Leftovers**

Taste Parade Comments:

Production Supervisor:_____

∴ **% Menu Mix = Portions Served / Actual Meal Count X 100**

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ANNEX D INSTRUCTIONS FOR COMPLETION OF PRODUCTION CONTROL CHART

PRODUCTION

Menu product– List all items on the menu to be prepared to the meal; Roast of Beef, Gravy.

Prepared by: – indicate who is to do the work; e.g. Cpl Jones

Recipe to use - Also identify the standardized recipe to be followed in preparing the product.

Amount / volume to prepare – state the amount or volume to be prepared. Keep in mind the amount lost in preparation and cooking (the difference between as purchase and edible portion).
Also state the number of portions or servings to be prepared. Take into consideration the number to be fed and what else is on the menu (menu mix).

Portion/Serving Size – indicate the amount to be served to one person e.g. 60 gm (2 oz) of green beans.

Instructions (including internal cooking temperature, hot and cold holding temperatures) – use this column to give direction or instructions such as cook in 2 kg batches for vegetables. Include internal cooking temperature for products to ensure product is not undercooked. Also indicate the temperature for hot holding and cold holding of prepared food products ready for service.

SERVICE

Run-out time – if you run out a particular product during the meal, indicate when the shortage occurred for future planning.

Quantity Remaining – record the volume or weight of product remaining (may also be stated in terms of servings)

Number of portions left over – record the number of portions left at the end of the meal

Number of portions served and % of menu mix – calculate the number of portions served.
For future planning, also calculate the % of the menu mix for a same menu category (such as main course) using the formulae under “Taste Parade Comments”.

Disposition of Leftovers – indicate what is to be done with leftovers, including storage temperatures, e.g. discard vegetables, chill sliced roast beef for sandwiches at 4 °C (40°F) or less.

Pre-preparation for: - state date items are for and indicate who, what, and how much is to be prepared.
Use this area to also given instructions about thawing of goods.

Taste Parades Comments – all products must be checked before the start of meal service. Record the observations here.
Check for appearance, colour, consistency, taste and temperature.

ANNEX E MENU PLANNING TO MINIMIZE FOOD SAFETY RISK

INTRODUCTION

The menu expresses the character of a food services operation and is largely responsible for its reputation. It is the foundation and the common core that guides decisions related to all management aspects of a food services operation including food safety risk. To ensure that the diners receive a well-balanced and consistent standard of feeding, it is essential to direct the method by which the menus are established and how the food will be prepared and served. The food safety risk must be at the centre of the menu planning process to ensure that NATO troops are served safe fresh meals, which consumption will positively impact on their performance.

PRINCIPLE OF MENU PLANNING

1. The menu is a dynamic tool that requires adjustments based on diners' preferences, nutritional requirements, availability of ingredients, cost of food, supply levels, etc. The menu should be diners driven and although satisfying diners is a primary concern for all food services managers, producing menu items at a cost that remains within budget allocations and at minimum food safety risks is essential.

2. Important factors such as storage conditions (time and temperature), personnel skill levels and the operation's ability to purchase, produce and serve the menu items in a safe and sanitary way must be taken into consideration when planning the menu in operational theatre.

3. The safety of fresh healthy meals shall never be compromised for variety or economy. For example, introducing local fruits from questionable origin to add to the selection of safe ones is not acceptable. The consequences of exposing NATO troops to food contamination or poisoning are costly and can seriously compromise the troops' performance.

4. This chapter is directed to units with an assured and varied food supply, but it also applies as much as feasible to more restrictive operational environment. Some general menu planning principles are more easily implemented in ideal static feeding facilities while operational environment may require adjustments to minimize food safety risk. The principles of menu planning are defined in the following paragraphs.

MENU STRUCTURE

1. The menu structure is defined by pre-established standards of meal components and food choices. These standards are the basis for ensuring equitable and consistent offering of food to all NATO personnel. The quality and safety of the food are not reflected in the number of dishes offered and in fact, an excessive diversification of the menu negatively impacts on quality and cost of food services. Acceptable standards of meal components and food choices are described at Annex F.

2. There are various types of menus, but a well-planned cycle menu is best suited for a captive diners population because it minimizes repetition of menu dishes, and helps the diners to plan their meal choices on a weekly basis. In addition, a cycle menu facilitates food purchase, production planning and staff scheduling; provides the best variety of menu offerings over a given period; and helps control food cost through inventory management and a well balanced and affordable menu selection.

NUTRITIONAL REQUIREMENTS

1. Nutritional needs of customers should be a primary concern for planning menus for all food services operations, but especially when living conditions constrain personnel to eat most of their meals in one place. The menu should provide variety, balance and nutritious selection of safe foods to meet the nutritional requirements of an active, healthy NATO military force in terms of energy, protein, carbohydrates, lipids, vitamins and minerals.

SOCIOCULTURAL AND RELIGIOUS FACTORS

1. It is fundamental to menu planning to know the diner population. NATO Forces recruit personnel from widely differing cultures and this is reflected in the highly variable food preferences of NATO forces. Sociocultural factors such as customs, values, and lifestyle influence the popularity of menu items. Menus can be enriched by the inclusion of dishes that are non-traditional in other NATO forces. Food habits and preferences should also be taken into consideration. Too often menu planners are strongly influenced by their own likes and dislikes of foods rather than those of their customers.

2. Several religions place dietary restrictions on their adherents. It is imperative that these structures are respected and are considered in menu planning if the unit consists of a significant number of personnel of a particular religious persuasion. Where only a few individuals who adhere to a particular diet for religious purposes are served at a unit, special arrangements are to be made. Food Services Managers are advised to consult the individuals because there are varying degrees of adherence to religious dietary restrictions. In general the following applies:

a. Judaism. Jewish dietary laws are chiefly concerned with the selection, slaughter and preparation of meat and fish based on the Old Testament of the Bible. “Kosher” describes foods that have been prepared and served in accordance with the body of Jewish law dealing with food – Kashrus. Jews are not permitted to eat the following:

(1) all products derived from the pig;

(2) shell fish and eels, etc (no fins or scales);

(3) meats cooked in or with dairy products particularly milk and butter; nor should meat be prepared, cooked or served in/with utensils, cutlery and crockery that have been in contact with dairy products;

(4) no birds other than domestic fowl (chicken, duck, turkey);

(5) leavened breads during Passover week; and

(6) foods cooked on the Sabbath.

b. Islam. Eating is a matter of faith for Muslims and is founded on the premise of good health. Hence, overindulgence is discouraged. Islam categorises food under three headings: Halal, Haram and Mushbooh.

(1) Halal: Halal describes foods that Muslims are permitted to eat according to Islamic dietary laws found in the Quran, Hadith and the Fiqh. All foods are Halal except those that are Haram or Mushbooh. Foods that are Halal are plentiful and include milk, honey, and fish (although some Muslims avoid fish), plants (non-intoxicating), fresh or frozen vegetables, fresh or dried fruits, nuts and grains;

(2) Haram: Haram foods are forbidden to Muslims and include alcohol and intoxicants, all products derived from the pig, animals improperly slaughtered or dead before slaughter, carnivorous animals, birds of prey, blood and blood products and foods contaminated by any of the above. Beef, lamb and mutton, goat, venison, chicken, duck and game birds are acceptable if they have been slaughtered in accordance with Islamic law; and

(3) Mushbooh: Mushbooh describes foods that is deemed to be of questionable origin and are, therefore, avoided by Muslims. Typical Mushbooh items are additives in processed foods such as emulsifiers, gelatine and enzymes. Islamic dietary laws are not static and the Muslim Food Board determines the category for each new food that is introduced to the market.

c. Ramadan. During the month of Ramadan, a Muslim is required to fast between sunrise and sunset. During the dark hours they may eat, but are encouraged not to over indulge. During Ramadan, there are three feast nights when Muslims are expected to meet and celebrate their faith together;

d. Hindu. In general, Hindus avoid all foods that are thought to inhibit physical and spiritual development. The Orthodox Hindu is vegetarian and will not eat any food which has involved the taking of life. The cow is sacred, but dairy products may be used freely. Less Orthodox Hindus will eat mutton, poultry and fish, but not products of the pig, which are considered unclean. Other groups that share the basic ethics of Hinduism are Vaishnavism, Shavism and Shaktism; and

e. Sikhs. Although Sikhs participate in many Hindu practices, they differ

significantly in their belief in a single God. Sikhs abstain from beef, but pork is permitted. Alcoholic beverages are prohibited.

MENU COMPOSITION

1. The number of weeks in a cycle menu depends on the length of time diners attend the dining facility for regular meals. If the diner population changes every week, the cycle may be as short as one week. If most diners are provided regular meals for several months, the cycle should be at least three weeks long to allow for sufficient variety without unwanted repetition.

2. To optimize their performance, NATO troops need to consume enough of the right food items. To facilitate healthy eating, cycle menus must integrate the following factors:

a. nutritional requirements: menus shall include a variety of choices that provide for a good balance of carbohydrates, protein and lipids while being attractive to diners. Healthy choices shall be provided with emphasis on using less fat (especially saturated and trans fat), less sodium, and more fibre;

b. economy (cost control): the choice of foods on cycle menus has a large impact on economy and cost control, especially when an all-inclusive meal plan is offered. The goal is to satisfy customer expectations of value, nutrition, and choice, while staying within the NATO meal day allocation. Offering a mix of low cost popular items and higher cost items is a way of achieving this goal;

c. variety in flavours: try to achieve contrast and balance by planning meals that combine tart and sweet, bland and strong flavoured, acidic and mellow flavours. Avoid serving all bland, or all highly seasoned foods at one meal. Particularly avoid serving two strong flavoured vegetables together (for example cabbage and broccoli). In general, avoid serving a flavour twice at the same meal (for example, green beans with almonds together with sole amandine). Each meal should include:

(1) a strong full flavour (meat, fish, cheese);

(2) a rich creamy flavour (cream soup, creamed vegetable, cheese, butter, or rich dessert);

(3) a sharp, thin taste (fruit, vegetable, salad);

(4) a solid neutral taste (potatoes, rice, wheat or other grain); and

(5) a sweet taste.

d. variety in colour: try to achieve variety in colour and final appearance of food items by carefully selecting vegetables, sauces and garnishes;

e. variety in texture: each food should have a different texture: crisp, smooth, chewy, soft, leafy, etc;

f. variety in size, shape, and height: the size, shape and height of food items should complement the total appearance of the plate. A combination of forms looks best, for example large and small, round and angular, formed and unformed, batons and nuggets. Some ideas for achieving height are: stacking meat attractively, using bowls for runny items, using food as containers (for example, pastry cases, vegetable shells), using imaginative garnishes;

g. variety in temperature: each meal should have some variety in food temperature. This is achieved by offering cool salads or relishes/pickles with hot meals, or hot soups with otherwise cold meals. Cold soups, hot desserts, and other novel foods served safely at unexpected temperatures can add additional interest. A multi-course meal should include some hot and some cold courses;

h. response to market and local conditions:

(1) know the market conditions, feature local, plentiful and seasonal foods that have been approved by trained veterinary services, environmental health services or preventive medicine personnel;

(2) plan menus to utilise promptly all food purchased and to allow immediate use of leftovers in a different form, if possible;

(3) plan menus with delivery day/time of perishable goods in mind if refrigeration is limited. This will allow immediate safe use of goods which otherwise could result in increased waste or potential food borne illness; and

(4) consider using other forms of perishable goods such as frozen fruits and vegetables, dehydrated or dry goods (e.g. dry powdered milk) if local food safety standards are inadequate.

i. accurate terminology: the menu is an important marketing tool, which must not be misleading. Especially when the diners represent several nations and may not be familiar with regional terminology. Menu items and accompaniments should be written in terms that adequately describe them. Terms such as "soup du jour", "chef's selection", and "assorted desserts" are not acceptable because they do not allow for adequate production and inventory planning and they do not give the diner enough information. In some cases, there is a legal requirement to describe the items accurately. In other cases, false descriptions simply add no value. For example, use:

(1) roast turkey, not roast Tom turkey;

(2) baked ham, not baked Virginia ham;

(3) salad with imitation crab, not crab salad;

(4) whipped topping, not whipped cream; and

(5) maple flavoured syrup, not maple syrup.

j. production potential: plan for ease of production, knowing the capacity of all departments since a lack of refrigeration or hot holding equipment could compromise the safety of food. Consider:

(1) space available for preparation and serving;

(2) equipment available for preparation and serving;

(3) amount of storage space available;

(4) number of employees and time schedules;

(5) efficiency and competencies of employees; and

(6) thawing time in refrigerators when using frozen products

k. variety in garnishes and accompaniments: whether they are traditional or innovative, garnishes, sauces, and gravies add interest to the menu.

3. **Building the menu**: a step-by-step procedure is the best approach for achieving a well-balanced cycle menu. The food items should be selected in the following sequence:

a. the entrée for the main meal: the entrée is the main item around which the meal is planned and must therefore be selected before any complementary foods. Because entrées are the most expensive food on the menu, planning the main meal meats for the entire cycle is a good way to ensure balance between high and low priced items. Alternative main courses should offer other protein options such as poultry, fish, meatless dishes (beans, tofu), etc. It is common in several cultures to eat raw meat or fish (beef tartar, sushi, etc.). The preparation of such items requires extreme freshness of ingredients and exceptional safety precaution in the preparation and serving process. For these reasons, these food items would be considered high risk items for food safety and must be avoided in the menu planning;

b. the entrée for the third meal: avoiding those used on the main meal menu or serving them in a different way may add to variety and prevent monotony. Meat extender such as meat loaf, stew, casserole and sandwiches are commonly served and meet the minimum requirement of meal components for third meal entrées;

c. decide on the starch items appropriate to serve with the entrée: usually if the meat is served with sauce, mashed, steamed or baked potato should be on the menu. Scalloped, creamed or au gratin potatoes are most appropriate with meat served without sauce. Rice, pasta, couscous, polenta, etc. are common potato substitutes;

d. select salads, hot vegetables and soups: work back and forth between the main and third meal to avoid repetition, introduce texture and color contrast into the meal and provide interesting flavour combinations;

e. plan desserts for the main and the third meal: they may be selected from the following main groups: fruits pudding, ice cream, yogurt, cake, pie, and cookies. Most desserts, especially dairy based ones, require refrigeration during serving time; therefore, limited adequate equipment may affect the dessert options;

f. plan breakfast using the acceptable standards at Annex F to ensure proper variety in fruits, hot and cold cereals, and breakfast entrées; and

g. review the entire day as a whole and evaluate if diners and management considerations have been met.

COST MANAGEMENT

The implementation of a cycle menu helps control food cost through a well balanced and affordable menu selection. Other practices such as portion control, proper storage, product rotation, proper sanitation practices in storage, production and serving areas, use of production control charts and recovery of leftovers may all affect the cost of food by reducing waste and spoilage. They are discussed in more details in Chapter 1.

EQUIPMENT

Equipment must be available to prepare products required by the menu. The menu must be balanced based on the equipment availability so that no station is overloaded or underutilized. Overloaded equipment may lead to service time delays and uncooked food items being held at room temperature, increasing the risk for food borne illness. Annexes F through H describe the acceptable composition of meals. There may be situations where a need for adjustment is required, especially in the early stage of deployed operations where all the hot and cold holding equipment may not be available.

STAFF SKILLS AND TRAINING

1. Qualified personnel are an essential component in menu planning. It would be ineffective to plan for menu items requiring specific skills if the available personnel is not qualified to prepare them. In some cases, qualified coworkers may provide complementary training, but a minimum level of cooking skills is necessary to ensure safe and proper preparation of menu items.

2. In addition to skill training, food safety training program shall be implemented for all food services staff. The potential risk of food contamination resulting from poor basic hygiene practices in particular is too often underestimated. Food handlers must have a

preventive approach and this topic is further discussed in Chapters 1 and 3.

SALAD BAR

1. Salad bar is part of the acceptable standards of meal components and food choices. It is an effective way to encourage diners to include more vegetables in their diet, which is often deficient in vitamins and fibres while on deployment. Like all other components of the meal pattern, a cycle menu is the most effective way to plan for a salad bar that offers color, texture and complementary flavours to the main course selection. By their ingredients content (meat, egg, dairy products, mayonnaise, etc.), many salads can be high-risk food items for contamination especially with salmonella. It is essential to adopt food handling and serving practices that prevent contamination.

2. Refrigerated equipment shall be used to maintain salad bar items at an internal temperature of 4° C (40° F) or less. When refrigerated salad bar equipment is limited or non-existent, the salad bar menu should offer vegetable-based salads instead of egg or meat salad choices. Oil-based dressings shall be preferred over mayonnaise and cream- or cheese-based dressings. Bean and seed sprouts should also be avoided, as they have been associated with several salmonella outbreaks in recent years and are now considered a high-risk food item when served uncooked.

DISPERSED MEALS (PACKED MEALS)

1. In most operations, there is a need to produce dispersed meals for personnel who cannot return to the dining facility for various reasons.

a. Hot dispersed meals are usually selected from the daily-established cycle menu that ensures proper balance and variety in meal components. Menu choices will support transportation and keep food at the recommended temperature if containers are pre-heated as prescribed. Nonetheless, some food items do not travel as well as others. It is the case of most pasta dishes, which will absorb moisture during transportation making them stick together and very difficult to serve at destination. Fish choices do not tolerate well transportation and can be very difficult to serve. For those reasons, such menu choices should be avoided in dispersed meal options. The acceptable composition of hot dispersed meals is described at Annex G. The proper handling of hot meal containers to minimize food safety hazard is detailed in Chapter 1.

b. Cold meals are not part of the regular cycle menu and therefore need their own planning tool. Again, in order to minimize improvisation, a cold meal cycle menu shall be established using the same principles as the main dining room menu. The acceptable composition of cold meals is described at Annex H. Special attention should be given to cold meal items that require multiple food handling steps such as meat sandwich fillings or dairy desserts. These items are potentially more exposed to temperature abuse during the production process and extra precaution should be observed. Special

packaging and handling is required to keep these meals safe. Dispersed meals must be protected against temperature abuse and possible physical or chemical contamination during transportation. Specific handling practices are detailed in Chapter 1.

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ANNEX F ACCEPTABLE STANDARDS FOR REGULAR MEAL COMPONENTS AND FOOD CHOICES

ACCEPTABLE STANDARDS FOR REGULAR MEAL COMPONENTS AND FOOD CHOICES

Food Types	**Breakfast**	*	**Main Meal or Fourth Meal**	*	**Third Meal**	*
Fruit	Fresh Fruit (to include one citrus) Juice (including vegetable juice)	2 2	Fruit	2	Fruit	2
Breakfast entrees	Hot cereal Cold cereals (including one whole grain or bran based) Pancakes, waffles, French Toasts	1 3 1				
Meat and substitute	Eggs, any style Hot meat (bacon, sausage, ham) Cold meat (ham, meat spread, cold cuts) Cheese Yogurt including low fat varieties	x 2 2 2 4	Freshly prepared meat dish Freshly prepared, hot, non-meat dish (pasta, egg, beans etc)	2 1	Freshly prepared meat dish Freshly prepared, hot, non-meat dish (pasta, egg, beans etc) Sandwich, 4 fillings plus 2 solid meats, 2 cheeses, tomatoes, lettuce, pickles and other appropriate condiments	2 1 6
Starch	Potato, baked beans Baked product (muffin, croissant) Bread product	1 2 4	Potato, pasta or rice (one not fried) Bread product	2 4	Potato or pasta or rice (one not fried) Bread product	2 4
Vegetables	Breakfast vegetables (e.g. stewed tomato)	1	Cooked vegetable Salad Bar **	2 x	Cooked vegetable Salad Bar**	2 x
Others	Spreads Preserves	1 4	Soup	1	Soup	1
Dessert		-	Fruit or milk prepared desserts Baked desserts Yogurt	2 2 4	Fruit or milk prepared desserts Baked desserts Yogurt	2 2 4
Beverages	Hot beverages including tea, (regular and herbal), coffee (fresh, decaf and instant, hot chocolate Fresh chilled milk (including 2%, 1% fat	3	Hot beverages (including tea, regular and herbal and coffee fresh, decaf and instant) Milk (including 1% fat and skim)	2 1	Hot beverages (including tea, regular and herbal and coffee fresh, decaf and instant)	3 1

	and skimmed, soy if requested)	3	Cold beverages including fruit/ vegetable juices, fruit drinks, carbonated and still flavoured drinks Chilled bottled water	3 1	Milk (including 1% fat and skim) Cold beverages including fruit/ vegetable juices, fruit drinks, carbonated and still flavoured drinks Chilled bottled water	3 1
Condiments	Butter, margarine, Honey, syrup, ketchup, mustard, mayonnaise, hot sauce, meat sauce	all	Butter, margarine, Honey, syrup, ketchup, mustard, mayonnaise, hot sauce, meat sauce	all	Butter, margarine, Honey, syrup, ketchup, mustard, mayonnaise, hot sauce, meat sauce	all

* Number of varieties to be offered; "x" means that these items must be available

** The Salad Bar composition must include as a minimum the following items, when adequate refrigeration equipment permits:

- 2 kinds fresh/processed meat including fish;
- 1 non meat choice;
- 2 mixed leaf salad (no vinaigrette);
- 2 compound/mixed salads (may include vinaigrette);
- 1 kind rice/pasta salad (may include vinaigrette);
- 1 kind bean salad (may include vinaigrette);
- salads not to be combined with any meat or fish product; and
- a variety of dressings plus reduced fat sauces and vinaigrettes.

ANNEX G - ACCEPTABLE STANDARDS - HOT DISPERSED MEALS

ACCEPTABLE STANDARDS FOR MEAL COMPONENTS HOT DISPERSED MEALS	
Breakfast	**Main Meal / Third Meal**
Same as Regular meal pattern at Annex F	Soup Main protein dish Starch item Vegetable Tossed salad, coleslaw or assorted raw vegetables Fresh fruit One prepared or baked dessert Bread or rolls and butter or margarine Two beverages Appropriate condiments

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ANNEX H – ACCEPTABLE STANDARDS – COLD DISPERSED MEALS

ACCEPTABLE STANDARDS FOR MEAL COMPONENTS **COLD DISPERSED MEALS**	
Dispersed Breakfast	**Dispersed Main Meal / Third Meal**
One fruit One juice Cereal (with 250 ml milk) Egg Breakfast meat or alternative (meat, cheese or yogurt) Two breakfast bread products Appropriate condiments	Two sandwiches: 1 of sliced solid meat 1 with a mixed filling **or** 1 sandwich with a mixed filling, and 1 solid meat item with a roll **or** 1 cold plate with sliced meats, and 1 solid meat item with two rolls. (**Note**: a variety of fresh bread products are to be used, e.g. one sandwich whole wheat, one sandwich white bread.) Side salad or assorted raw vegetables Condiments appropriate for sandwiches and salad Fresh or canned fruit One prepared or baked dessert Two beverages One pocket supplement (for example, granola bar, nuts, or cheese a cracker pack)

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ANNEX I - MODEL FOR CLEANING AND SANITATION

INSTRUCTIONS FOR CLEANING AND SANITATION

LOGO (FORCES)	SERVICE	UNIT	CODE OF PROCEDURE	Page 1/ 2
	FOOD SAFETY – INSTRUCTIONS FOR CLEANING AND DISINFECTION			
Subject: Program of cleaning and disinfection.				
Application: Every area and equipment of institutional catering.				
References : (STANAG XXXX, Edition XX, national rules or instructions, …).				

INTRUCTIONS

1. check list of detergents and disinfectants.

2. Instructions for use (collection of safety data sheets is required). .

3. Identification of specific work areas.

4. Implementation of cleaning and sanitation procedures (attach model number) for each area or equipment.

5. Recording of cleaning and sanitation operations.

ANNEX J RECORDING FORM - CLEANING AND SANITATION PROGRAM

Cleaning and Sanitation Program

AREAS OR EQUIPMENT	FREQUENCY	DETERGENTS DISINFECTANTS SANITIZING AGENTS TO UTILIZE (Contact's time)	MATERIALS REQUIRED	PROCEDURE (Temperature, rinsing, ETC…)	OPERATOR

UNIT :		First draft by:
Code of procedure :		Version:

ANNEX K MEDICAL FITNESS TO HANDLE FOOD

1. Name:

2. Unit/ mission: _____

3. For employment at: _____ (name of institution providing catering).

4. Has the food handler in the past three years, or are he/she still suffering from:

Condition	Yes	No
Diarrheal/vomiting diseases (e.g. salmonellosis, shigellosis, cholerae, EHEC, norovirus and other relevant viruses, amoebic and other protozoan infection)		
Infectious hepatitis (hepatis virus)		
Contagious systemic diseases (eg typhoid/ paratyphoid, tuberculosis,)		
Wounds/ skin lesions / boils contagious skin diseases (e.g. *Staphylococcus. aureus*, scarlet fever, MRSA)		
Respiratory/throat/mouth/nose infections		
Parasitic diseases		
Other contagious infection (eye, ear etc)		
Other medical conditions affecting food safety (eg psoriasis, extreme dandruff.)		
Mental disorders		
Disability that would affect:		
Standing		
Walking		
Climbing stairs		
Lifting		
Use of the hands or the palms		

5. In the last two years has the food handler been absent from work for longer than three days in a row, not being on regular leave, vacation, or holiday? If the answer is yes, have the absences been due to any of the above mentioned diseases.

6. At present is the food handler taking any medicine prescribed by the doctor, or undergoing any other form of medical treatment? If yes, ensure that the medication does not affect the food safety or the food handler's security.

7. Has a member of the food handler's family had diarrhoea, vomiting or other infectious disease in the past month? If yes, please state the details.

8. Have X-rays or other suitable examination for tuberculosis been performed within the last 6 months?

9. Have blood samples, throat swabs and stool samples been tested for other infectious diseases within the last 15 days?

10. By the signature and dates given below, the medical doctor assures that the given information is correct and the food handler's medical condition is appropriate for working in food facilities without compromising food safety.

Signature_____(Prospective employee)

Signature_____(Physician)

ANNEX L EMPLOYEE DECLARATION OF HEALTH STATUS RETURN TO WORK

First and Last Name: _____
Date of Birth: _____
Address: _____

I declare that during the last 6 months. I have had no symptoms such as -

- Diarrhoea or thin liquid stool more than one time each day with nausea, vomiting or fever
- Fever with headache, pain in the waist or in the joints
- milky or bloody stool
- yellow coloured skin or eyes
- reddened, swollen, oozing, wet wounds or open skin diseases
- or prolonged coughing with phelgm

I do not have knowledge that any person of my household has had any of these symptoms above during the last six months.

I declare that, for the last 6 months, I have not received a confirmed diagnosis or treatment for

- salmonella infection
- typhus
- parathyphus
- cholera
- shigellosis
- gastroenteritis
- hepatitis
- or infection with parasites

I declare that for the last 6 months, that I do not have any knowledge of any person of my household receiving a confirmed diagnosis or treatment for any of the diseases listed above.

If I develop any symptoms as described above, I will immediately report them to the kitchen manager.
I understand that hiding one of the diseases mentioned above could cause serious health problems and danger for the people I serve.
I recognize that if I fail to report symptoms it could be reason for my dismissal from service. If I come under medical treatment for any other reason, I will report this to the doctor and I will ask him if I can still be permitted to work in the kitchen. I will ask him to prepare a document stating that I am able work in a kitchen. I will give this document to the kitchen manager.

I am prepared to undergo a medical examination every six months as detailed in Chapter 2, Food Service Perrsonnel, of AMedP-4.6, specifically 2.3, para. 1 at the expense of the employer, and more often if extraordinary conditions occur, at the discretion of the employer.

Employee Signature _____ **Date**

ANNEX M FOOD DEFENCE RISK ASSESSMENT

ANNEX M - FOOD DEFENCE RISK ASSESSMENT

The below Food Defence Risk Assessment should be completed before commencing food services operations and a minimum once/year (unless otherwise required) in conjunction with on the ground NATO security elements. The following questions must be answered by NATO food supply depot or food services managers. Note: adopted and adapted from the FDA site (http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/FoodDefence/ucm083075.htm#appendix)

Form Instructions:

Step 1 - Answer the following questions in relation to Food Defence with your facility. Answer Yes, No, Non-Applicable (NA) of Do Not Know.

Step 2 – For each No or Don`t Know answer, explain your action to mitigate this specific point (Actions to rectify non-Compliance)

Step 3 – If not you cannot rectify this issue, explain why.

Step 4 - Once Step 3 is complete, sign and date the document at end of the assessment.

(NA – Non-Applicable)

1. Food Establishment Operations – Management

Question #	Question	Yes	No	NA	Do Not Know	Actions to rectify non-Compliance
1.	Are you prepared for the possibility of tampering or other malicious, criminal, or terrorist actions					

2.	Have you assigned responsibility for security to knowledgeable individual(s)					
3.	Have you conducted an initial assessment of food security procedures and operations					
4.	Do you have a security management strategy to prepare for and respond to tampering and other malicious, criminal, or terrorist actions, both threats and actual events, including identifying, segregating and securing affected product					
5.	Do you have a plan for emergency evacuation, including preventing security breaches during evacuation					
6.	Do you maintain any floor or flow plan in a secure, off-site location					
7.	Are you familiar with the emergency response system with your NATO Operation					
8.	Is management aware of 24-hour contact information for security elements					
9.	Have you made staff aware of who in management they should alert about potential security problems (24-hour contacts)					
10.	Do you promote food security awareness to encourage all staff to be alert to any signs of tampering or other malicious, criminal, or terrorist actions or areas that may be vulnerable to such actions, and reporting any findings to identified management					
11.	Do you have an internal communication system to inform and update staff about relevant security issues					
12.	Do you have a strategy for communicating with your diners					

2. Food Establishment Operations – Supervision

Question #	Question	Yes	No	NA	Do Not Know	
1.	Do you provide an appropriate level of supervision to all staff, including cleaning and maintenance staff, contract workers, data entry and computer support staff, and especially new staff?					
2.	Does your staff conduct routine security checks of the premises, including automated manufacturing lines, utilities and critical computer data systems (at a					

	frequency appropriate to the operation) for signs of tampering or malicious, criminal, or terrorist actions or areas that may be vulnerable to such actions.					

3. Recall Strategy

Question #	Question	Yes	No	NA	Do Not Know	Actions to rectify non-Compliance
1.	Have you identified the person responsible for recall, and a backup person					
2.	Have you provided for proper handling & disposition of product					
3.	Have you identified applicable contacts, addresses and phone numbers such as theatre units, security elements, emergencies response unit, etc.					

4. Investigation of Suspicious Activity

Question #	Question	Yes	No	NA	Do Not Know	Actions to rectify non-Compliance
1.	Do you investigate threats or information about signs of tampering or other malicious, criminal, or terrorist actions					
2.	Do you alert appropriate law enforcement and public health authorities about any threats of or suspected tampering or other malicious, criminal, or terrorist actions					

5. Evaluation

Question #	Question	Yes	No	NA	Do Not Know	Actions to rectify non-Compliance
1.	Do you evaluate the lessons learned from past tampering or other malicious, criminal, or terrorist actions and threats					
2.	Do you perform random food security inspections of all appropriate areas of the facility (including receiving and warehousing, where applicable) using knowledgeable in-house or third party staff					
3.	Do you verify that security contractors are doing an appropriate job, when applicable					

6. Human Element – Staff

Question #	Question	Yes	No	NA	Do not Know	Actions to rectify non-Compliance
1.	Do you examine the background of all staff as appropriate to their position, considering employees' access to sensitive areas of the facility and the degree to which they will be supervised					
2.	Do you know who is working, who should be on premises, and where they should be located, for each shift					
3.	Do you keep daily work information updated					
4.	Have you establish a system of positive identification and recognition that is appropriate to the nature of the workforce, when appropriate					
5.	Do you collect the uniforms, name tag, or identification badge when a staff member is no longer associated with the establishment					
6.	Have you identified staff that require unlimited access to all areas of the facility					
7.	Do you reassess levels of access for all staff periodically					
8.	Do you limit access so staff enter only those areas necessary for their job functions and only during appropriate work hours					
9.	Do you change combinations, rekey locks and/or collect the retired key card when a staff member who is in possession of these is no longer associated with the establishment, and additionally as needed to maintain security					
10.	Do you restrict the type of personal items allowed in establishment					

12.	Do you allow in the establishment only those personal use medicines that are necessary for the health of staff and ensure that these personal use medicines are properly labeled and stored away from food handling or storage areas					
13.	Do you prevent staff from bringing personal items into food handling or storage areas					
14.	Do conduct regular inspection of contents of staff lockers, bags, packages, and vehicles when on company property					
15.	Do you incorporate food security awareness, including information on how to prevent, detect, and respond to tampering or other malicious, criminal, or terrorist actions or threats, into training programs for staff, including seasonal, temporary, contract, and volunteer staff					
16.	Do you provide periodic reminders of the importance of security procedures					
17.	Do you encourage staff participation in security procedures					
18.	Do you watch for unusual or suspicious behavior by staff					
19.	Are you alert for atypical staff health conditions that staff may not voluntarily report and absences that could be an early indicator of tampering or other malicious, criminal, or terrorist actions, and reporting such conditions to local health authorities					

7. Human Element – Public

Question #	Question	Yes	No	NA	Do Not Know	Actions to rectify non-Compliance
1.	Do you inspect incoming and outgoing vehicles, packages and briefcases for suspicious, inappropriate or unusual items or activity, to the extent practical					
2.	Do you restrict entry to the establishment					
3.	Do you ensure that there is a valid reason for the visit before providing access to the facility - beware of unsolicited visitors					
4.	Do you verify the identity of unknown visitors					
5.	Do you restrict access to food handling and storage areas					
6.	Do you restrict access to locker room					

8. Facility						
Question #	**Question**	**Yes**	**No**	**NA**	**Do Not Know**	**Actions to rectify non-Compliance**
1.	Do you protect perimeter access with fencing or other deterrent, when appropriate					
2.	Do you secure all doors, windows, roof openings/hatches, vent openings, ventilation systems, utility rooms, ice manufacturing and storage rooms, loft areas, trailer bodies, tanker trucks, railcars, and bulk storage tanks for liquids, solids, and compressed gases					
3.	Do you use metal or metal-clad and locked exterior doors to the extent possible when the facility is not in operation, except where visibility from public thoroughfares is an intended deterrent					
4.	Do you minimize the number of entrances to restricted areas					
5.	Do you secure bulk unloading equipment when not in use and inspect the equipment before use					
6.	Do you account for all keys to establishment					
7.	Do you monitor the security of the premises using appropriate methods					
8.	Do you minimize, to the extent practical, places that can be used to temporarily hide intentional contaminants					
9.	Do you provide adequate interior and exterior lighting, include emergency lighting, where appropriate, to facilitate detection of suspicious or unusual activities					
10.	Have you implemented a system of control for vehicles authorized to park on the premises					
11.	Do you keep parking areas separated from entrances to food storage and process areas and utilities, where practical					

9. Storage and Use of Poisonous and Toxic Chemicals (for example, cleaning and sanitizing agents, pesticides)

Question #	Question	Yes	No	NA	Do not Know	Actions to rectify non-Compliance
1.	Do you limit poisonous and toxic chemicals in the establishment to those that are required for the operation and maintenance of the facility and those that are being held for sale					
2.	Do you store poisonous and toxic chemicals as far away from food handling and storage areas as practical					
3.	Do you limit access to and locked storage areas for poisonous and toxic chemicals that are not being held for sale					
4.	Do you ensure that poisonous and toxic chemicals are properly labeled					
5.	Do you use pesticides in accordance with the Theater Insecticide, Fungicide, and Rodenticide SOPs					
6.	Do you know what poisonous and toxic chemicals should be on the premises and keeping track of them					
7.	Do you investigate missing stock or other irregularities outside a normal range of variation and alert Theatre security elements about unresolved problems, when appropriate					

10. Operations

Question #	Question	Yes	No	NA	Do Not Know	Actions to rectify non-Compliance
1.	Do you use only known, appropriately licensed or permitted (where applicable) contract manufacturing and packaging operators and sources for all incoming materials, including ingredients, compressed gas, packaging, labels, and materials for research and development					

2.	Do you take reasonable steps to ensure that suppliers, contract operators and transporters practice appropriate food security measures					
3.	Do you authenticate labeling and packaging configuration and product coding/expiration dating systems (where applicable) for incoming materials in advance of receipt of shipment, especially for new products					
4.	Do you request locked and/or sealed vehicles/containers/railcars, and, if sealed, obtain the seal number from the supplier and verify upon receipt, making arrangements to maintain the chain of custody when a seal is broken for inspection by a governmental agency or as a result of multiple deliveries					
5.	Do you request that the transporter have the capability to verify the location of the load at any time, when practical					
6.	Do you have establish delivery schedules, not accepting unexplained, unscheduled deliveries or drivers, and investigate delayed or missed shipments					
7.	Do you supervise off-loading of incoming materials, including off hour deliveries					
8.	Do you reconcile the product and amount received with the product and amount ordered and the product and amount listed on the invoice and shipping documents, taking into account any sampling performed prior to receipt					
9.	Do you investigate shipping documents with suspicious alterations					
10.	Do you inspect incoming materials, including ingredients, compressed gas, packaging, labels, product returns, and materials for research and development, for signs of tampering, contamination or damage or "counterfeiting", when appropriate					
11.	Do you evaluate the utility of testing incoming ingredients, compressed gas, packaging, labels, product returns, and materials for research and development for detecting tampering or other malicious, criminal, or terrorist action					
12.	Do you reject suspect food, or food from unapproved sources?					
13.	Do you alert appropriate law enforcement and public health authorities about evidence of tampering, "counterfeiting" or other malicious, criminal, or terrorist action					

11. Storage

Question #	Question	Yes	No	NA	Do Not Know	Actions to rectify non-Compliance
1.	Do you have a system for receiving, storing, and handling distressed, damaged, returned, and rework products that minimizes their potential for being compromised or to compromise the security of other products					
2.	Do you keep track of incoming materials and materials in use, including ingredients, compressed gas, packaging, labels, salvage products, rework products, and product returns					
3.	Do you investigate missing or extra stock or other irregularities outside a normal range of variability and report unresolved problems to appropriate law enforcement and public health authorities, when appropriate					
4.	Do you store product labels in a secure location and destroy outdated or discarded product labels					
5.	Do you minimize reuse of containers, shipping packages, cartons, etc., where practical					

12. Finished Products

Question #	Question	Yes	No	NA	Do Not Know	Actions to rectify non-Compliance
1.	Do you ensure that public storage warehouse and shipping operations (vehicles and vessels) practice appropriate security measures					
2.	Do you perform random inspection of storage facilities, vehicles, and vessels					
3.	Do you evaluate the utility of finished product testing for detecting tampering or other malicious, criminal, or terrorist actions					
4.	Do you request locked and/or sealed vehicles/containers/railcars and provide the seal number to the consignee					
5.	Do you request that the transporter have the capability to verify the location of the load at any time					
6.	Do you establish scheduled pickups and reject unexplained, unscheduled pickups					
7.	Do you keep track of finished products					

8.	Do you investigate missing or extra stock or other irregularities outside a normal range of variation and alerting appropriate law enforcement and public health authorities about unresolved problems, when appropriate					
9.	If applicable to your operation, do you advise sales staff to be on the lookout for counterfeit products and to alert management if any problems are detected					

13. Access to Computer Systems

Question #	Question	Yes	No	NA	Do Not Know	Actions to rectify non-Compliance
1.	Do you restrict access to computer process control systems and critical data systems to only those with appropriate clearance					
2.	Do you eliminate computer access when a staff member is no longer associated with the establishment					
3.	Do you establish a system of traceability of computer transactions					
4.	Do you review the adequacy of virus protection systems and procedures for backing up critical computer based data systems					
5.	Do you validate the computer security system					

Completed by:_____ Position:_____ Location:_____ Date:_____

ANNEX N DEFINITIONS

The following terms and definitions are used for the purpose of this document:

Approved Sources – food sources that have been deemed safe to procure by the preventive medicine or veterinary authority. See AMedP 4.12 for more details on approved sources from a Food Defence perspective.

Calibration – a comparison of a piece of equipment against a standard known instrument of higher accuracy to detect, correlate, adjust, rectify and document the accuracy of the instrument being compared.

Clean – the absence of visible contaminants including dirt, food particles, grease, soil and other foreign material.

Clean-as-you-go – a method of cleaning where food handlers continuously clean as they perform their assigned tasks.

Cleaning - The process of removing visible dirt and debris from food and food-contact surfaces.

Cold holding - the temporary storage or display of cold potentially hazardous foods at an internal temperature of 4 °C (40 °F) or colder.

Contamination – the presence of harmful chemicals, foreign materials or pathogenic micro-organisms or their toxins in food or drink.

Critical Defect - Condition, practice, step or procedure that if in noncompliance presents a biological, chemical or physical property that causes food to be unsafe for consumption, and where the food safety hazard cannot be prevented, eliminated or reduced by a subsequent practice, step or procedure.

Cross-contamination – occurs when pathogens are transferred from a raw food or an infected person, insect or rodent to other raw or cooked food , or to a surface such as a counter top, cutting board, utensil or dish and then to food.

Disinfection - a procedure to reduce most harmful microorganisms (not including their spores) from surfaces or objects.

Dispersed meal - is any freshly prepared meal consumed away from the kitchen/dining facility.

Dry or ambient food storage – an area or room used to store non-perishable, shelf-stable food.

First-In-First-Out (FIFO) system of stock rotation – a system of stock rotation that ensures that the oldest items are issued first.

Foodborne illness – illness caused by eating contaminate food.

Food contact surface – any part of utensils or equipment with which food normally comes in contact during transportation, storage, preparation, cooking or service.

Food Defence - Actions, regulations, and other measures designed to prevent deliberate contamination or adulteration of food and food items thereby making them unsafe for consumption.

Food handler – an individual working with unpackaged food, food equipment, utensils or food contact surfaces.

Food Protection - Actions, regulations, and other measures designed to ensure Food Safety and Food Defence.

Food Safety - Actions, regulations, and other measures designed to prevent natural or accidental contamination or adulteration of food and food items thereby making them unsafe for consumption.

Frozen food storage – the storage of frozen products at temperature of 0 °C (32 °F) or less.

Hermetically sealed container – a package that does not permit the transfer of contamination or gasses between food and its surrounding.

Host Country National (or Local National) - those personnel who are indigenous to the area of operations.

Hot holding – the temporary storage or display of hot potentially hazardous foods at an internal temperature of 60 °C (140 °F) or hotter after cooking or reheating.

Incubation period – the time it takes for symptoms of illness to appear in a person after being infected.

Infestation – the presence of pests.

Major Defect - Condition, practice, step or procedure which is of less food safety concern yet affects or can affect the usability of the products. Example: A food safety program for one area is not implemented at all.

Meal production control chart – a management tool used to formalize the meal production plan and to inform all production personnel of what food to prepare, when to prepare it and how much to prepare.

Notice of rejection – a written document used to notify the supplier of the reason why a food item was rejected.

Observation Defect - All non-conformities that are not Critical or Major. Example: A food safety program for one area is partially implemented.

Parts per million (ppm)– a measure of chemical solution concentrations. E.g. 100 ppm of chlorine bleach is 100 milligrams of chlorine bleach diluted with one liter (1 million milliliters) of water is expressed as 100 parts per million of chlorine bleach.

Pasteurization – a process that exposes food for a specific combination of time and temperature to reduce pathogens in milk and other foods and slows the growth of other organisms that may cause spoilage.

Pathogen – any disease causing microorganism or toxin producer.

Potable water – water that is safe to drink.

Potentially hazardous food – food that allows pathogenic micro-organisms to grow or produce toxins if contaminated.

Reconstituted – dehydrated food products combined with liquids such as milk or water. These foods may become potentially hazardous when reconstituted but are usually considered safe foods when properly dry stored.

Refrigerated food storage – the storage of perishable, fresh or potentially hazardous foods at a maximum internal temperature of 4 °C (40 °F) or less.

Temperature abuse – exposure of potentially hazardous food to the temperature danger zone of 4 °C (40 °F) to 60 °C (140 °F).

Temperature danger zone – the temperature range between 4 °C (40 °F) and 60 °C (140 °F). Pathogens and spoilage micro-organisms can grow rapidly in this zone.

Sanitise – procedures used to control the growth of pathogenic micro-organisms on clean food contact surfaces.

Sanitation - the application of cumulative heat or chemicals on cleaned food and food-contact surfaces that, when evaluated for efficacy, is sufficient to yield a reduction of 5 logs, which is equal to a 99.999% reduction, of representative disease microorganisms of public health importance (including spores).

Sanitising agents – chemical compounds used to kill pathogenic micro-organisms on clean food contact surfaces. Common sanitizers used in the food industry are:

Chlorine (Household bleach),
Potassium permanganate,
Iodine (Iodophors), and
Quaternary ammonium (Q.U.A.T.S.).

Shelf life – the length of time a food product can be properly stored without compromising food safety or quality.

Tactical Kitchen – a food production area set up in an austere location to provide fresh rations to troops in a forward area; due to its location, it may have been built in a less than ideal infrastructure as developing a more permanent structure would have a detrimental effect on the ability of these tactical units to achieve their mission.

Third Country National - those personnel of a separate nationality to both the contracting government and the Area of Operations.

ANNEX O – DECISION FLOWCHART – ESTABLISHING FIELD CATERING OPERATION

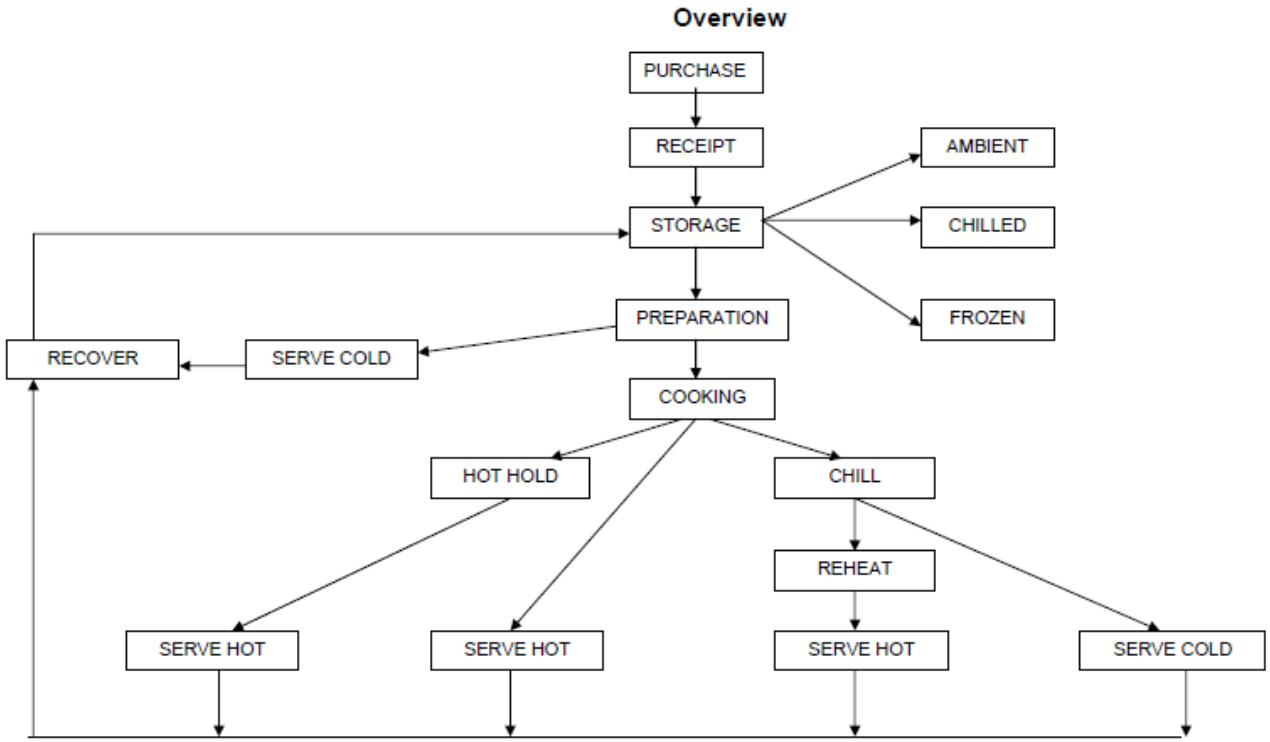
The aim of the following flowchart is to assist kitchen managers in assessing the hygiene problems that could be faced when establishing a catering facility in the field. It can be used by Junior NCOs with limited knowledge of catering hygiene. Ideally, however, Food Service/Catering Officers and suitably qualified and experienced Senior NCOs should be available to advise and supervise on detail.

It may be necessary, under field conditions, to alter normal peacetime catering routines as carried out in barracks, to reduce risk. If, following an appropriate risk assessment and the implementation of risk management measures, an unacceptable residual risk remains, those particular routines or procedures should not be carried out. This may mean reverting to the use of Operational Ration Packs and informing the chain of command that the use of fresh rations poses an unacceptable level of risk.

The flowcharts are intended to supplement, and not replace, National food hygiene and safety legislation and military regulations.

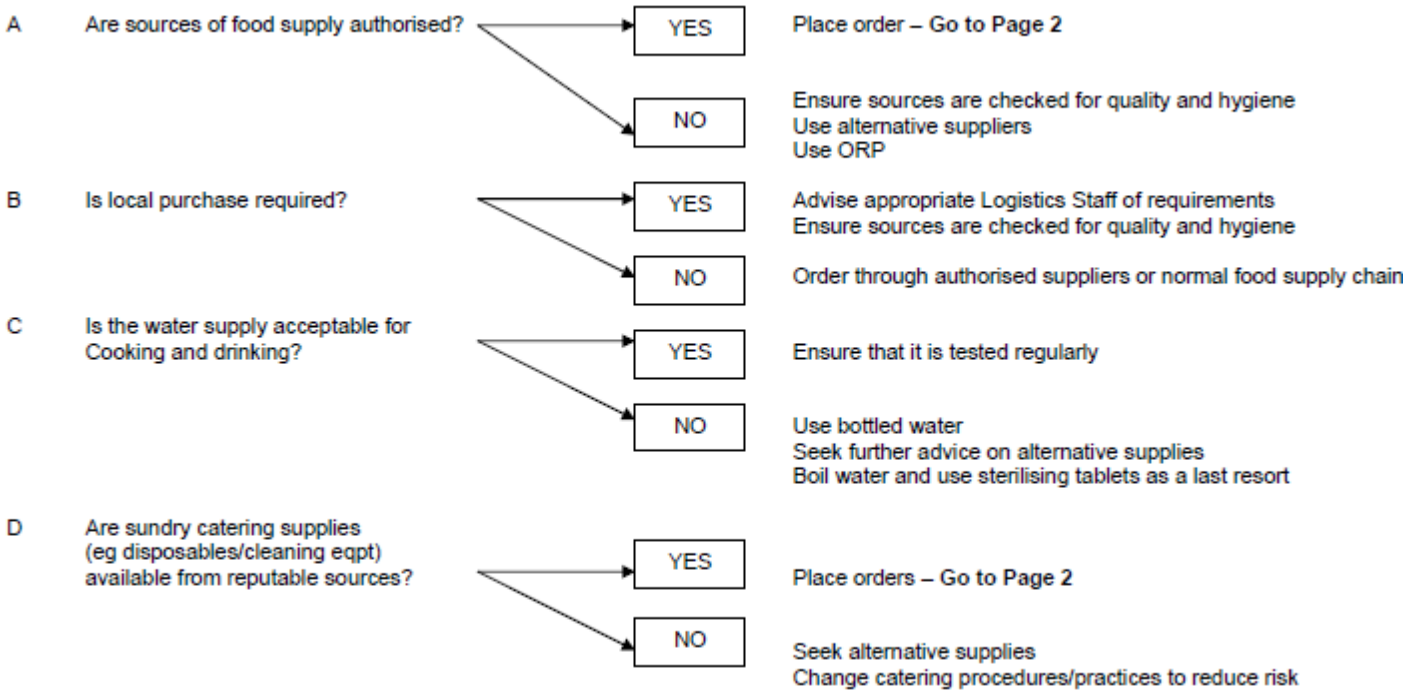
Kitchen/catering managers are to work through the flow charts identifying potential hygiene hazards. Where these are identified, options are given for their removal or alternative actions are suggested.

If further advice is required, it must be sought from the Formation/Contingent/Unit Catering Officer, higher Formation Logistic Support (Food Service) Staff and/or Preventive Medicine/Veterinary/Environmental Health Staff.

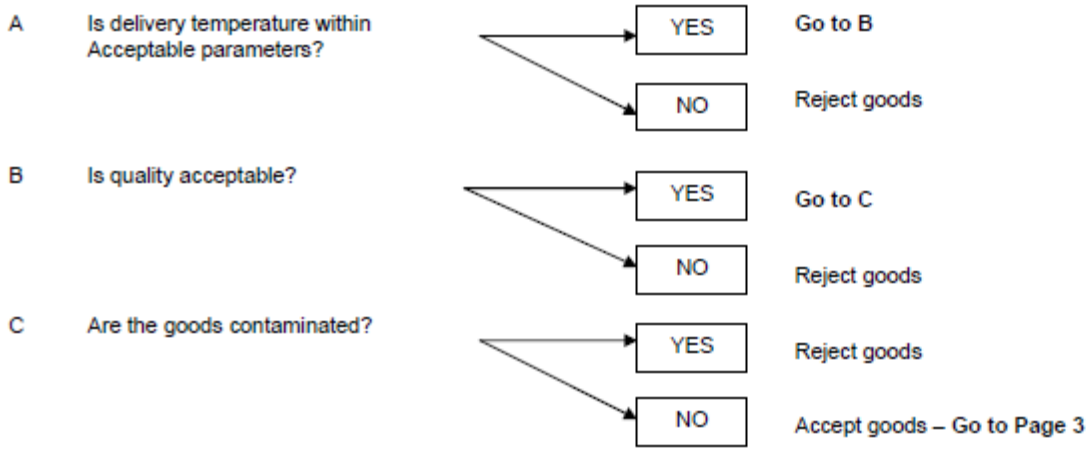

Overview
PURCHASE
RECEIPT
AMBIENT
STORAGE
CHILLED
FROZEN
PREPARATION
RECOVER
SERVE COLD
COOKING
HOT HOLD
CHILL
REHEAT
SERVE HOT
SERVE HOT
SERVE HOT
SERVE COLD

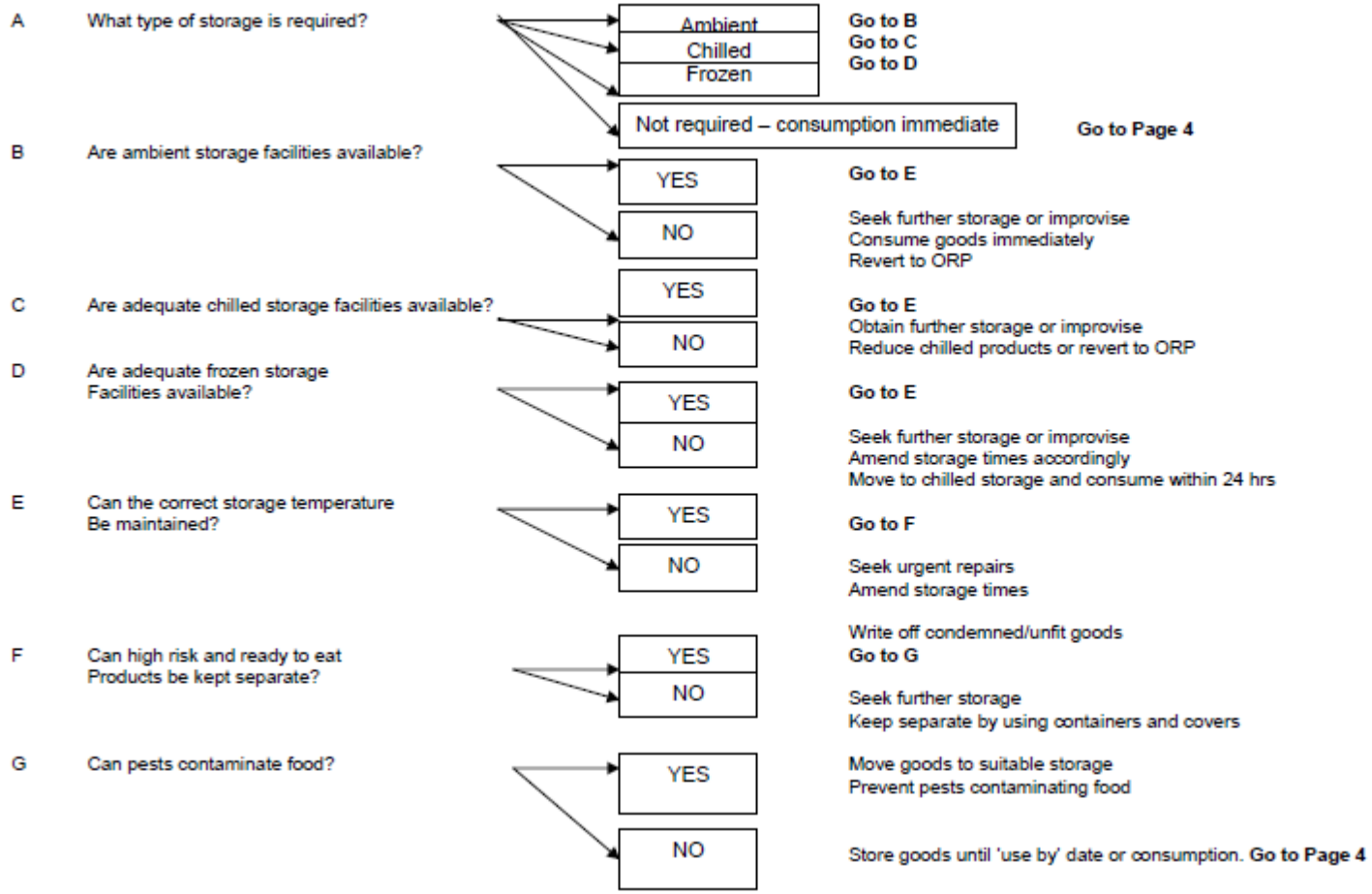
INDEX

Page 1 – PURCHASE



Page 2 – RECEIPT




A
What type of storage is required?
Ambient
Chilled
Frozen
Go to B
Go to C
Go to D
Not required – consumption immediate
Go to Page 4
B
Are ambient storage facilities available?
YES
NO
Go to E
Seek further storage or improvise
Consume goods immediately
Revert to ORP
C
Are adequate chilled storage facilities available?
YES
NO
Go to E
Obtain further storage or improvise
Reduce chilled products or revert to ORP
D
Are adequate frozen storage
Facilities available?
YES
NO
Go to E
Seek further storage or improvise
Amend storage times accordingly
Move to chilled storage and consume within 24 hrs
E
Can the correct storage temperature
Be maintained?
YES
NO
Go to F
Seek urgent repairs
Amend storage times
Write off condemned/unfit goods
F
Can high risk and ready to eat
Products be kept separate?
YES
NO
Go to G
Seek further storage
Keep separate by using containers and covers
G
Can pests contaminate food?
YES
NO
Move goods to suitable storage
Prevent pests contaminating food
Store goods until 'use by' date or consumption. Go to Page 4

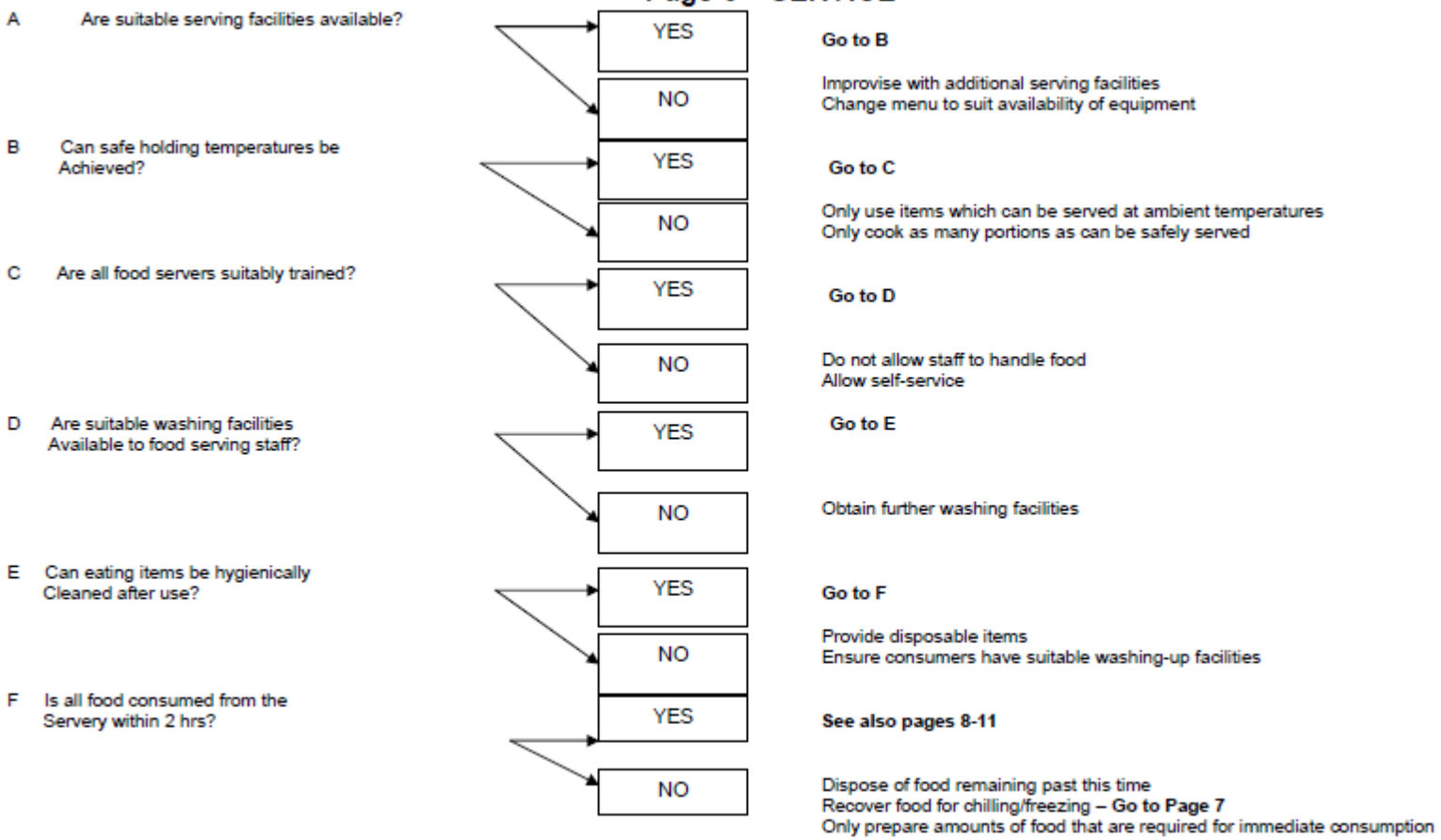
Page 4 – PREPARATION

A	Are adequate preparation areas Available?	YES	**Go to B**
		NO	Move location Improvise with additional preparation areas
B	Are preparation areas able to be Hygienically cleaned between Different activities?	YES	**Go to C**
		NO	Keep high risk activities separate Only prepare low risk items
C	Are all food handlers adequately Trained?	YES	**Go to D**
		NO	Avoid staff handling food Increase supervision Provide *ad hoc* training until formal training is possible
D	Are suitable food washing facilities Available?	YES	Also use disinfectants – **Go to E**
		NO	Obtain further washing facilities Use only goods that are ready to eat
E	Can pests contaminate food?	YES	Move goods to suitable preparation areas Prevent pests contaminating food
		NO	**Go to F**
F	Can thawing be carried out safely?	YES	**Go to G**
		NO	Provide suitable thawing facilities Reduce amount of frozen items requiring thawing
G	Are there suitable storage facilities Available for prepared food?	YES	Store goods until cooking or consumption – **Go to Page 5**
		NO	Consume immediately Only prepare amounts of food that can be stored safely Modify menu plan accordingly

Page 5 – COOKING

A	Are adequate cooking facilities available?	YES	Go to B
		NO	Move locations Improvise with additional cooking facilities Change menu to suit availability of equipment
B	Can safe cooking temperatures be Achieved?	YES	Confirm with thermometer/probe – Go to C
		NO	Only use items which can be safely under-cooked Ensure items are fully cooked eg hard eggs, only clear cooking juices
C	Are all food handlers suitably trained?	YES	Go to D
		NO	Do not let staff handle food until trained
D	Are suitable washing facilities available?	YES	Go to E
		NO	Obtain further washing facilities Use only foods that are ready to eat
E	Are items being cooked early?	YES	Ensure safe hot holding facilities are available Alter menu to suit equipment availability
		NO	Go to F
F	Are there suitable storage facilities For cooked foods?	YES	Store goods until consumption – Go to Page 5
		NO	Provide suitable storage facilities Consume immediately Only prepare amounts of food that can be stored safely

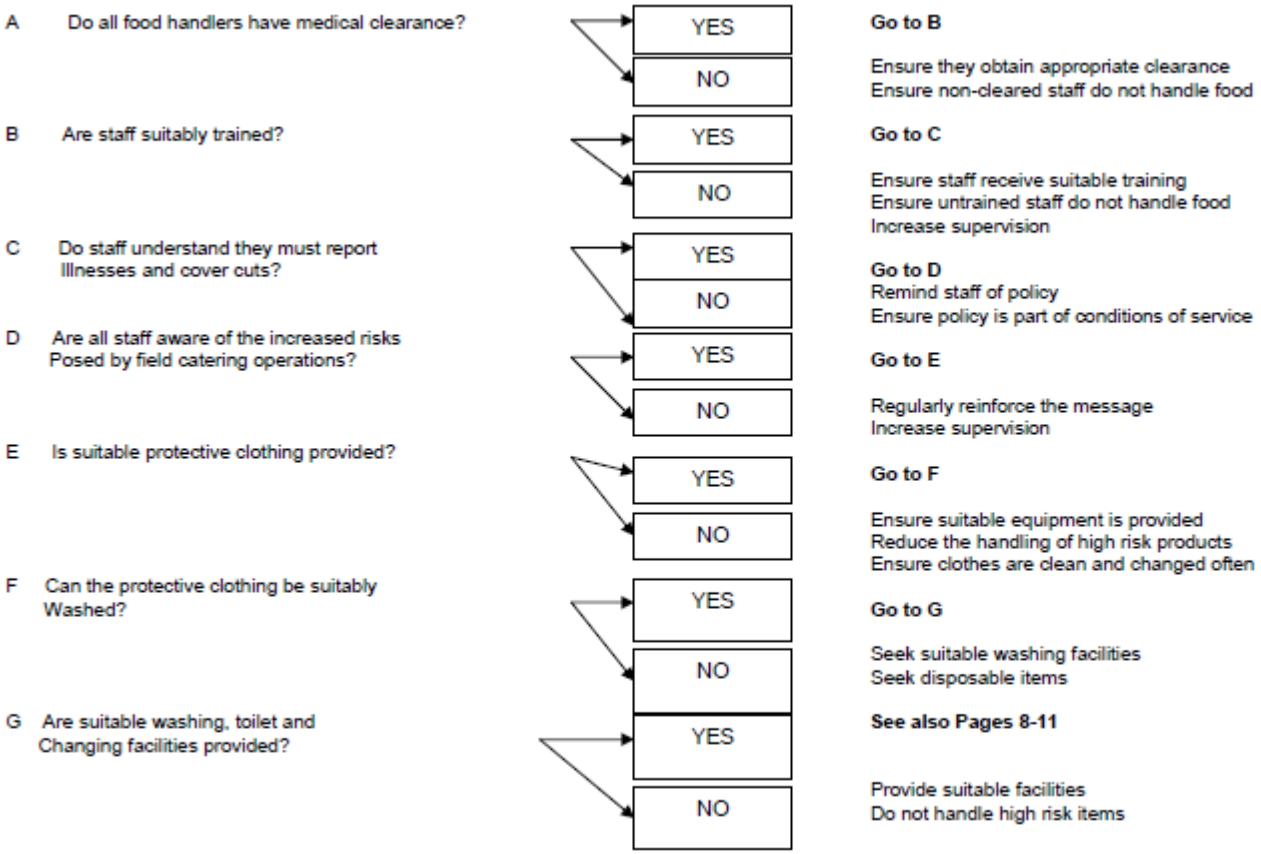
Page 6 – SERVICE



Page 7 – RECOVERY

A	Are suitable storage facilities available?	YES	Go to B
		NO	Improvise with additional storage facilities Change menu to ensure majority of foods are consumed
B	Can foods be chilled/frozen to a safe Temperature within 90 mins?	YES	Go to C
		NO	Dispose of surplus food items
C	Is food covered and labelled correctly?	YES	Go to D
		NO	Ensure suitable equipment is provided Dispose of surplus food items
D	Can safe re-heating temperatures be Achieved?	YES	Go to Page 6
		NO	Do NOT try to re-heat; dispose of surplus items Food is to be served cold – Go to E
E	Is chilled food consumed within 48 hrs?	YES	See also pages 8-11
		NO	Dispose of unused food items

Page 8 – PERSONNEL



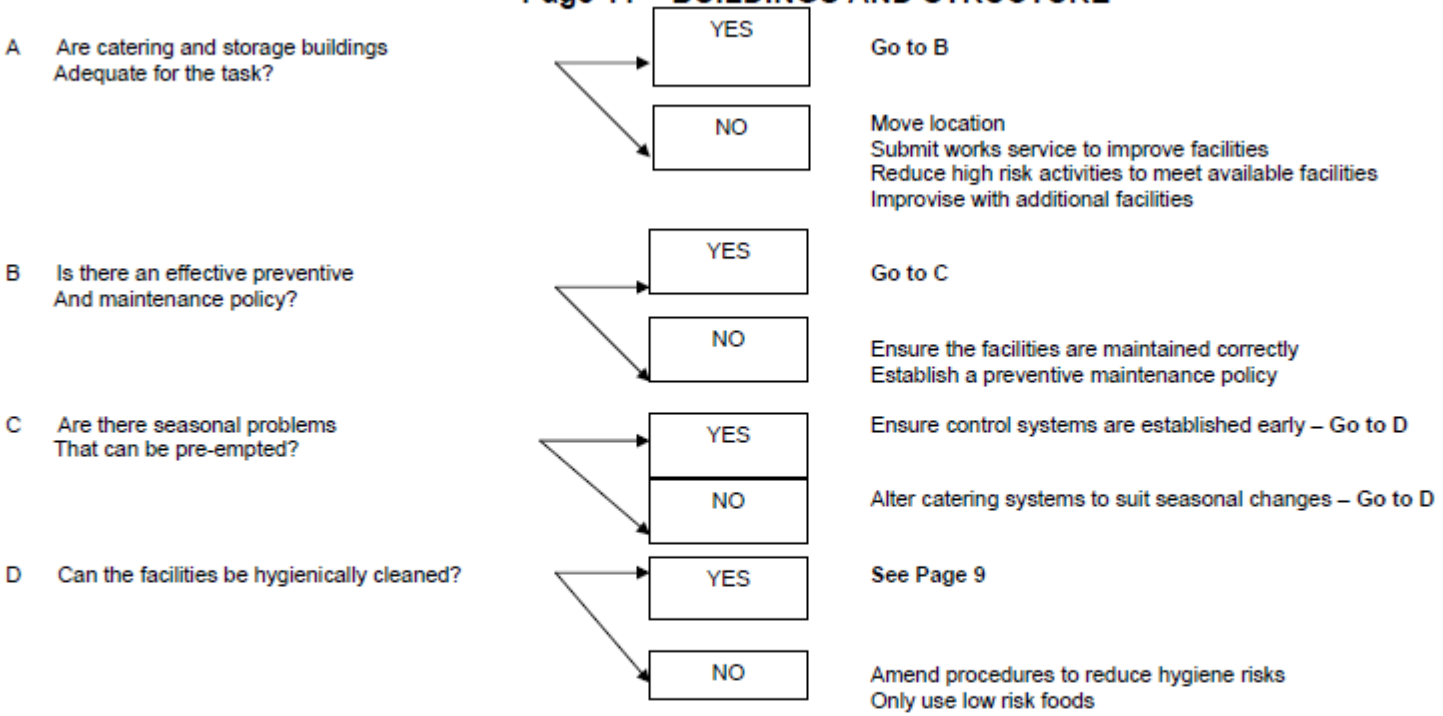
Page 9 – CLEANING

A Are suitably trained cleaning staff Available?	YES	**Go to B**
	NO	Recruit cleaning staff Utilise existing manpower
B Do staff understand appropriate Health and Safety procedures	YES	**Go to C**
	NO	Explain the immediate, high risk hazards to staff Ensure staff are trained to a level suitable for the task Ensure material safety data sheets and cleaning instructions are available
C Is suitable protective equipment provided?	YES	**Go to D**
	NO	Ensure suitable protective equipment is provided Reduce the handling of high risk products
D Are cleaning materials stored safely in a Locked area?	YES	**Go to E**
	NO	Ensure suitable storage is provided
E Is a comprehensive cleaning schedule Provided?	YES	**Go to F**
	NO	Draw up a suitable cleaning schedule
F Are the cleaning tasks carried out correctly?	YES	**Go to G**
	NO	Ensure the tasks are carried out correctly
G Are the cleaning tasks documented Correctly?	YES	Maintain documentation for the specified period
	NO	Ensure cleaning tasks are documented correctly

Page 10 – PEST CONTROL

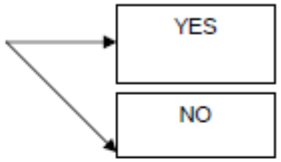
A Is a pest control system in place?	YES	Go to B
	NO	Set up a pest control contract through Logistics Staff Utilise trained personnel within the Unit
B Is the pest control equipment Operating correctly?	YES	Go to C
	NO	Ensure the equipment is replaced and maintained Prevent the ingress of pests by other means Prevent pests contaminating food or surfaces
C Are all goods checked regularly For pest infestation?	YES	Dispose of contaminated items – Go to D
	NO	Carry out regular checks
D Are the high risk areas such as Swill areas kept clean?	YES	Go to E
	NO	Ensure cleaning is carried out correctly
E Are there seasonal problems that Can be pre-empted?	YES	Ensure control systems are established early – Go to F
	NO	Alter catering systems to suit seasonal changes – Go to F
F Are the pest control procedures documented?	YES	Maintain documentation for the specified period
	NO	Ensure the appropriate documentation is kept

Page 11 – BUILDINGS AND STRUCTURE



Page 12 – MENU PLANNING

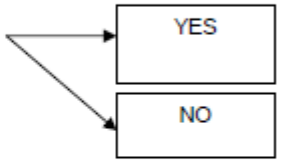
A Are there any specific food items that Are likely to pose a high risk?



Go to B

See Page 1

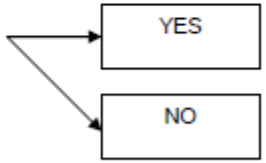
B Can the menu plan be modified to Reduce risk?



Remove high risk foods – Go to C

Ensure as many of the risks are reduced as is practicable
Inform consumers of the risks (eg eat sandwiches within 4 hrs)
Go to Page 1

C Can the nutritional requirements and Menu variety be achieved?



Go to Page 1

Consider using ORP
The menu must only be provided for as short a time as possible

AMedP-4.6(B)(1)